

Arbuckle, J.G., Jr., & Laws, L. "Farmer Perspectives on Climate Change." *Resilient Agriculture*. Aug. 2014: 20-23. Print.

FARMER PERSPECTIVES

ON CLIMATE CHANGE



Corn Belt Farmers are Concerned, Support Adaptation Action in the Ag Community

BY J. GORDON ARBUCKLE JR.

Corn Belt agriculture — the source of much of the world’s corn and soybean — is vulnerable to increasing weather extremes associated with climate change. Threats to agriculture also represent threats to long-term food security and societal stability. Calls for increasing the resiliency of Midwestern agricultural systems are on the rise. A central objective of the Sustainable Corn Project’s social science research is to develop a better understanding of farmer perspectives on climate change and what should be done to prepare for predicted changes. This article presents results from the 2012 survey of farmers.¹

What do farmers believe about climate change?

Beliefs differ. Most of the farmers surveyed (66%) believed that climate change is occurring (see Table 1 below). Only 41%, however, believed that humans are a significant cause. Almost one-third were still uncertain about whether climate change is happening or not.

Are farmers concerned about the potential impacts of climate change?

Many farmers are concerned about weather-related challenges that climatologists predict will become more difficult. Farmers are worried about increases in drought, heat, extreme rains, crop diseases, and weed pressure (Fig. 1). Level of concern varies with beliefs about climate change. Farmers who attribute climate change to human activity reported significantly higher levels of

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TABLE 1 | FARMER BELIEFS ABOUT CLIMATE CHANGE.

Climate change is occurring, and it is caused mostly by human activities	8%
Climate change is occurring, and it is caused more or less equally by natural changes in the environment and human activities	33%
Climate change is occurring, and it is caused mostly by natural changes in the environment	25%
There is not sufficient evidence to know with certainty whether climate change is occurring or not	31%
Climate change is not occurring	4%

FIGURE 1 | FARMER CONCERNS ABOUT PREDICTED IMPACTS

Farmer concern about predicted impacts of climate change, percent concerned or very concerned.

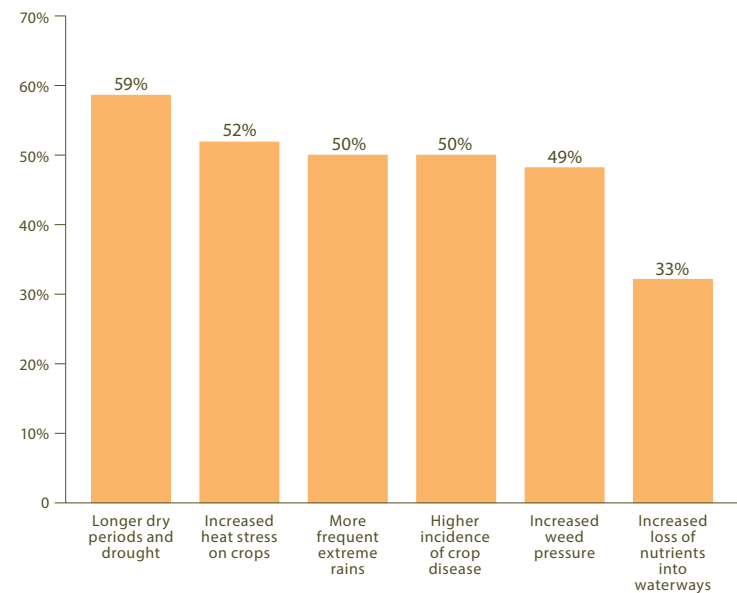
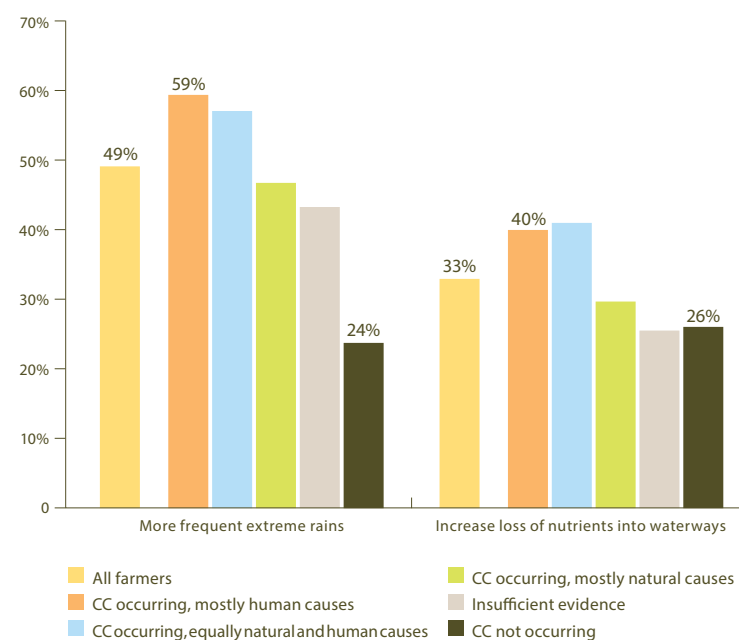


FIGURE 2 | FARMER CONCERNS BY CLIMATE CHANGE BELIEF

Percent concerned or very concerned about extreme rains and nutrient loss, by climate change (CC) belief.



1 Additional survey results are available at http://sustainablecorn.org/What_Farmers_are_Saying/Farmer_Perspectives_on_Ag_and_Weather_Variability_Stat_Atlas.html.

LEARNING FROM FARMERS

By Lynn Laws

Farmers are interested in talking about climate change and what it might mean for their operations, says Marilyn Thelen, an educator with Michigan State University Extension and member of the Sustainable Corn Project extension team. Throughout 2013, Thelen and 18 other extension educators on the project interviewed 160 farmers in Iowa, Illinois, Indiana, Michigan, Minnesota, Missouri, Ohio, South Dakota and Wisconsin. Investigators are beginning to pore over the results — over 8,000 transcribed pages of conversations with farmers. The interviews covered farmer perspectives on conservation in the context of climate change and increasingly common extreme weather events. They also explored farmer views on the challenges associated with use of the major conservation practices that biophysical scientists on the project are researching, such as nutrient management techniques, conservation tillage, cover crops, extended rotations, and controlled drainage water management.

A team of researchers on the project developed questions to guide the interviews, but farmers and extension educators talked freely.

“The interview process allowed us to begin a discussion of climate change and potential impacts on agriculture in a way that was non-threatening,” Thelen says.

Gabrielle Roesch-McNally, an Iowa State University graduate research assistant on the project, who served as coach and coordinator of the interview process, says, “The team did a fantastic job engaging farmers in discussions about conservation challenges and successes in the face of a changing climate. The research team is learning so much from the transcribed interviews.”

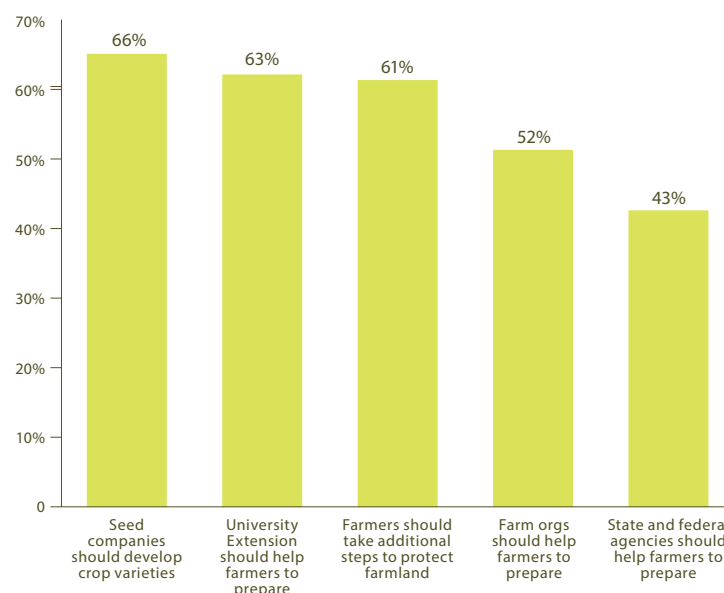
J. Gordon Arbuckle Jr., associate professor of sociology at Iowa State University and the lead social scientist on the Sustainable Corn Project, led the development of the project’s 2012 survey that was completed by nearly 5000 farmers (see page 23) and assisted with the development of the questions for the in-person interviews. “Doing both a survey and in-depth interviews with farmers has deepened our understanding of their challenges and concerns and is helping to direct further research and extension activities.”

Arbuckle says he, Roesch-McNally and the rest of the social science team will continue to analyze the survey and interview data and publish articles and reports over the course of the project. Together with the extension educator team, they are using the results to inform outreach strategies and activities.

Lynn Laws is a communications specialist for the Sustainable Corn Project and for Iowa State University, College of Agriculture and Life Sciences.

FIGURE 3 | FARMER SUPPORT FOR ADAPTATION ACTIONS

Support for adaptation action to prepare for “increased weather variability” (percent agree or strongly agree, five-point agreement scale)



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concern than those who believe it is due to natural causes, are uncertain about the existence of climate change, or do not believe it is happening (Fig. 2).

Do farmers support action?

Farmers were given a number of statements about potential actions that could be taken to prepare for or address potential changes in climate and asked to rate their agreement on a five-point scale from strongly disagree to strongly agree. Many of the statements focused on adaptation to increased weather variability.

Most farmers believed action should be taken. Two-thirds of farmers agreed seed companies should develop crop varieties adapted to increased weather variability. Similar percentages agreed that university extension should help farmers to prepare and that farmers themselves should take additional steps to protect their farmland (Fig. 3).

Insight into farmer beliefs, concerns, and support for action related to climate change can inform the development of engagement strategies lead to more resilient agricultural systems. There is a commonly held assumption that farmers are reluctant to discuss climate change. However, this research shows that many farmers are concerned about the predicted impacts of climate change and most are supportive of private and public sector action to help them to adapt to increased weather variability.



J. Gordon Arbuckle Jr., Ph.D., is an extension sociologist at Iowa State University and the lead social scientist on the Sustainable Corn Project.



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< Chad Ingels (left), Iowa State University extension specialist, discusses survey questions with a farmer in northeast Iowa. Ingels leads the Sustainable Corn Project extension team. Photo courtesy Iowa State University College of Agriculture and Life Sciences.

Survey Says: Engage Farmers as Problem Solvers

"Adaptation is what farmers do; they are professional adapters."

will contribute to the development of extension and outreach strategies that effectively support their efforts to respond to increasing weather variability in the Corn Belt. Towards that effort, project researchers analyzed data from their 2012 survey of 4,778 farmers from 11 U.S. Corn Belt states. The research attempted to shed light on two related questions: (1) do farmers differ in their beliefs about climate change, experience with extreme weather, concerns about risks to agriculture, confidence in their ability to cope, and level of support for public and private action; and, (2) are there potential areas of common ground among farmers that can help improve engagement strategies?¹

Data analysis revealed six distinct classes of farmers: the Concerned (14%), the Uneasy (25%), the Uncertain (25%), the Unconcerned (13%), the Confident (18%), and the Detached (5%). The Concerned tended to believe that climate change is happening and caused mostly by humans, had experienced the most extreme weather in recent years, and were most concerned about impacts

Sustainable Corn Project social science researchers are working to better understand farmers' perspectives on climate change and related impacts. Increased knowledge of farmers' viewpoints

of climate change. At the other end of the spectrum, the Detached tended to not believe that climate change is occurring, had not dealt with extreme weather, and were not concerned.

Despite a number of substantial differences, farmers were quite similar in terms of (1) confidence that they will be able to adapt to increases in weather variability, and (2) support for public and private efforts to help them adapt (Fig. 3).

"A lot of farmers do not believe that climate change is due to human activity, so focusing on mitigation may be ineffective with them," says J. Gordon Arbuckle Jr., a professor of sociology at Iowa State University and the lead social scientist on the Sustainable Corn Project.

Arbuckle says outreach and extension strategies should build on farmers' confidence in their ability to adapt to weather extremes. "Adaptation is what farmers do; they are professional adapters. People who work with farmers should approach them as active partners and leaders in the effort to increase the resilience of agricultural systems rather than passive consumers of information and recommendations."

Outreach efforts that (1) appeal to farmers' problem solving capacity and (2) employ terms such as "weather variability," instead of terms that evoke controversy — such as anthropogenic climate change — are likely to be more effective in engaging farmer partners in the quest for more resilient agricultural systems.

¹ The survey was conducted in partnership with the Useful to Usable (U2U) project (www.AgClimate4U.org), another USDA-funded climate and agriculture project. The 22 HUC 6 watersheds that were surveyed account for more than half of all U.S. corn and soybean production. Farmers selected for the survey were those who grew corn and who had more than \$100,000 in gross farm income in 2011; these large-scale farmers cultivate approximately 80 percent of the farmland in the region. The results reported in this article will be published in a forthcoming issue of the Journal of Soil and Water Conservation.