



Corn Belt farmers' concerns about drought and heat-related threats to their farm operations

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Climate change presents a number of threats to the Corn Belt's predominant corn-soybean agricultural system. A key objective of the Sustainable Corn project is to conduct social science research to assess farmers' understanding of climate change and attitudes toward adaptation and mitigation practices and strategies. Toward that end, a survey of Corn Belt farmers was conducted in February and March 2012. This report summarizes a portion of that survey. More comprehensive results are available at: sustainablecorn.org/What_Farmers_are_Saying/Farmer_Survey.

In general, human behavioral responses to potential hazards and threats are influenced by perceived risks. In other words, if people do not view a given situation or event as risky, they are not likely to act in response. Climate scientists predict that Corn Belt weather will become increasingly variable and extreme, with negative implications for agriculture. Our survey sought to measure farmers' level of concern about those predicted impacts.

The Project

The Sustainable Corn Project is a USDA-funded transdisciplinary partnership among 11 institutions creating new science and educational opportunities. The project seeks to increase resilience and adaptability of midwestern agriculture by identifying farmer practices and policies that increase sustainability while meeting crop demand.

sustainablecorn.org

The Survey

The farmer survey was carried out in partnership with the Useful to Useable (U2U) project, another USDA-funded climate and agriculture project. The 2012 survey was completed by 4,778 corn farmers with at least US\$100,000 of gross sales and a minimum of 80 acres of corn production.

Where

The sample was stratified by 22 six-digit Hydrologic Code Unit (HUC) watersheds that cover a substantial portion of 11 Corn Belt states—Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, Ohio, South Dakota, and Wisconsin. The 22 watersheds contain over half of U.S. corn and soybean acres.

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Source: Loy, Adam, Jon Hobbs, J. Gordon Arbutckle Jr., Lois Wright Morton, Linda Stalker Prokopy, Tonya Haigh, Tricia Knoot, Cody Knutson, Amber Saylor Mase, Jean McGuire, John Tyndall, and Melissa Widhalm. 2013. Farmer Perspectives on Agriculture and Weather Variability in the Corn Belt: A Statistical Atlas. CSCAP 0153-2013. Ames, IA: Cropping Systems Coordinated Agricultural Project (CAP): Climate Change, Mitigation, and Adaptation in Corn-based Cropping Systems. Available at sustainablecorn.org.

The survey provided a list of predicted changes in the Corn Belt climate that are viewed as threats to agriculture. The items covered potential threats to farm operations from increased precipitation, drought and heat, and pest and disease. The items were preceded by the text, “The following are problems that some Corn Belt farmers have experienced over the past few years. How concerned are you about the following potential problems for your farm operation?” Farmers’ concerns were measured on a four-point concern scale from “not concerned” (1) to “very concerned” (4).

Survey Results

This report presents data for two items that measured farmers’ concerns about: (1) longer dry periods and drought and, (2) increased heat stress on crops. For the purpose of this report, the concerned and very concerned categories are combined.

On average across all watersheds, nearly six-in-ten farmers (59%) were concerned or very concerned about longer dry periods and drought (table 1). Concern was highest in Lower Platte watershed, where 71% of farmers selected the concerned or very concerned category. Level of concern was lowest for respondents in Maquoketa Plum watershed, where 45% indicated that they were concerned or very concerned about longer dry periods and drought (figure 1).

Across all watersheds, half (52%) of respondents were concerned or very concerned about the risk of increased heat stress on crops (table 1). Respondents in Lower Platte watershed had the highest level of concern (65%) and respondents in Maquoketa Plum watershed expressed the lowest level of concern (41%) (figure 2).

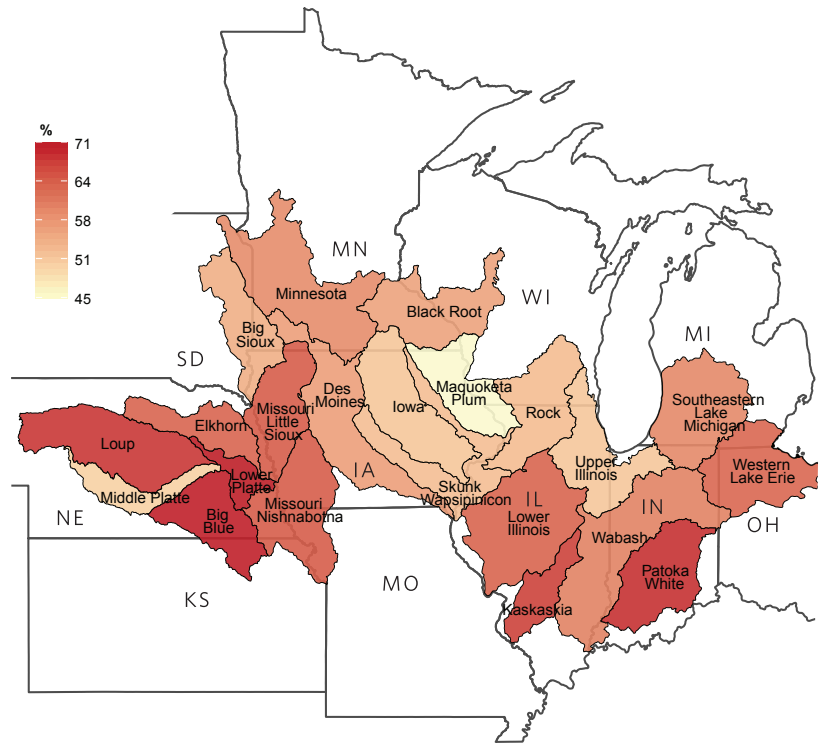


FIGURE 1 | Longer dry periods and drought, percent concerned or very concerned.

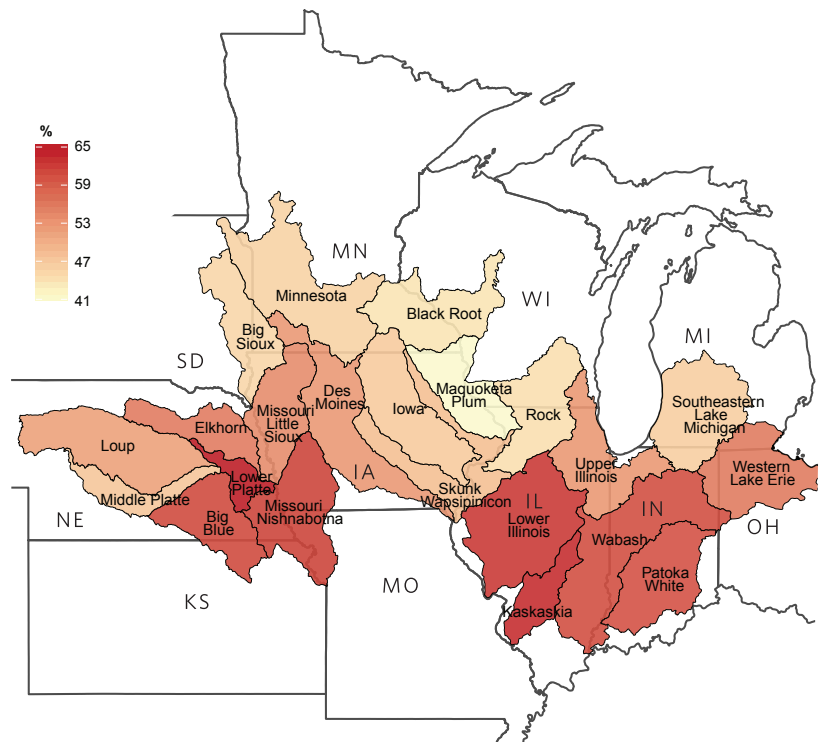


FIGURE 2 | Increased heat stress on crops, percent concerned or very concerned.



TABLE 1 | Concerns¹ about drought and heat-related threats to farm operations, percent concerned or very concerned, by watershed.

Watershed (HUC6)	Longer dry periods and drought	Increased heat stress on crops
All Watersheds	59	52
Loup	68	51
Middle Platte	50	47
Elkhorn	63	55
Big Blue	70	61
Lower Platte	71	65
Big Sioux	54	45
Missouri-Little Sioux	64	54
Missouri-Nishnabotna	64	61
Minnesota	58	46
Des Moines	56	52
Iowa	51	47
Black Root	56	44
Skunk Wapsipinicon	52	48
Maquoketa Plum	45	41
Lower Illinois	63	62
Rock	53	44
Kaskaskia	67	63
Upper Illinois	51	52
Wabash	60	60
Patoka-White	68	60
Southeastern Lake Michigan	59	46
Western Lake Erie	63	55

¹Concerns were measured on a 4-point concern scale: not concerned, somewhat concerned, concerned, very concerned.

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The Sustainable Corn project (officially referred to as the Climate and Corn-based Cropping Systems Coordinated Agricultural Project) is a transdisciplinary partnership among 11 institutions: Iowa State University; Lincoln University; Michigan State University; The Ohio State University; Purdue University; South Dakota State University; University of Illinois; University of Minnesota; University of Missouri; University of Wisconsin; USDA Agricultural Research Service - Columbus, Ohio; and USDA National Institute of Food and Agriculture (USDA-NIFA). Project website: sustainablecorn.org.



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