



# Corn Belt farmers' beliefs about climate change and its causes

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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](http://sustainablecorn.org/What_Farmers_are_Saying/Farmer_Survey).

Beliefs are people's perceptions about the world and how it works. They are statements about what is regarded as true and not true. Beliefs arise from a number of sources, ranging from scientific fact, systematic (or unsystematic) observation, learned behavior, or unverified assumptions. This report summarizes farmers' beliefs about climate change and its causes.

## Survey Results

Beliefs about climate change and its causes were measured through a five-category survey item that was preceded by the text, "There is increasing discussion about climate change and its potential impacts. Please select the statement that best reflects your beliefs about climate change." The five categories were: (1) climate change is occurring and it is caused mostly by human activities; (2) climate change is occurring and it is caused mostly by natural changes in

### 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](http://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.

the environment; (3) climate change is occurring and it is caused more or less equally by natural changes in the environment and human activities; (4) there is not sufficient evidence to know with certainty whether climate change is occurring or not; and, (5) climate change is not occurring.

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**Source:** Loy, Adam, Jon Hobbs, J. Gordon Arbuckle 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](http://sustainablecorn.org).

Across all watersheds, eight percent (8%) of farmers believed that climate change is occurring and is caused mostly by human activities (table 1). The watershed with the lowest percentage of farmers who selected this category was Elkhorn (3%), and the highest percentage (11%) was found in Upper Illinois watershed (figure 1).

One in four farmers (25%) selected the category, “climate change is occurring, and it is caused mostly by natural changes in the environment” (table 1). The percentage of farmers who selected this category ranged from a low of 17% in Rock watershed to a high of 30% in Skunk Wapsipinicon and Loup watersheds (figure 2).

On average across all watersheds, 33% of respondents believed that climate change is occurring, and is caused more or less equally by natural changes in the environment and human activities (table 1). The percentage of respondents who selected this category ranged from a low of 27% in Skunk Wapsipinicon and Missouri-Little Sioux watersheds to a high of 45% in Rock watershed (figure 3).

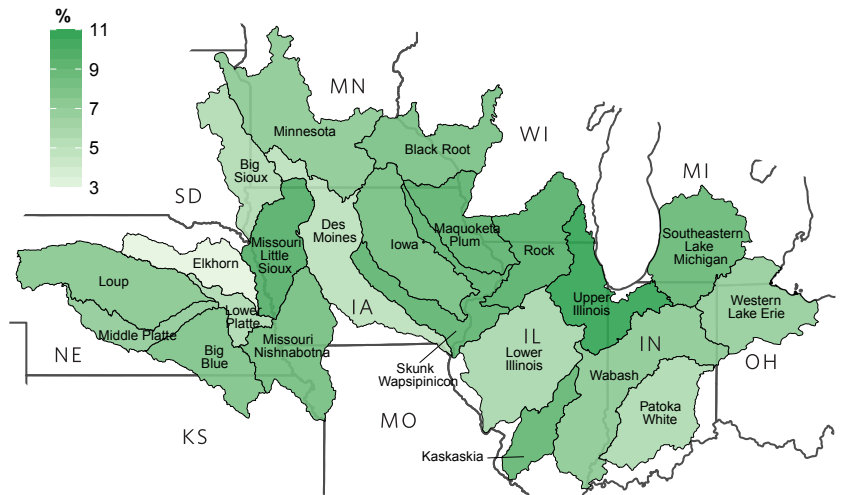


FIGURE 1 | Percent of farmers who believed that climate change is occurring, and it is caused mostly by human activities.

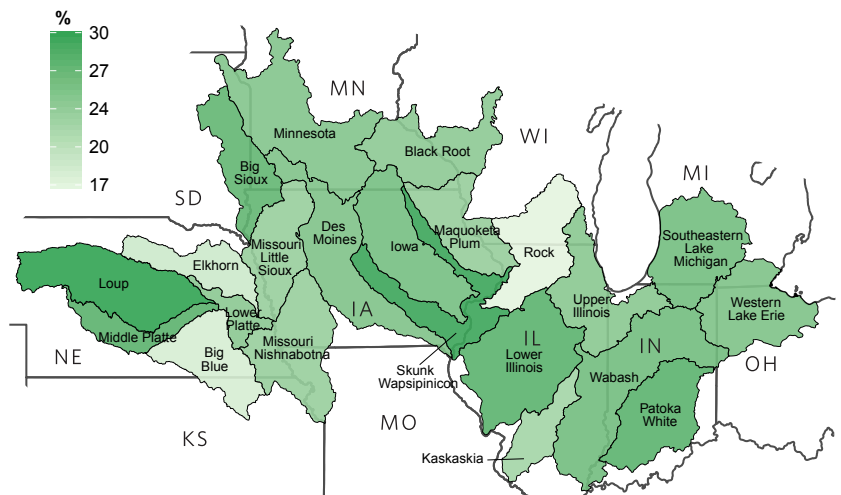


FIGURE 2 | Percent of farmers who believed that climate change is occurring, and it is caused mostly by natural changes in the environment.

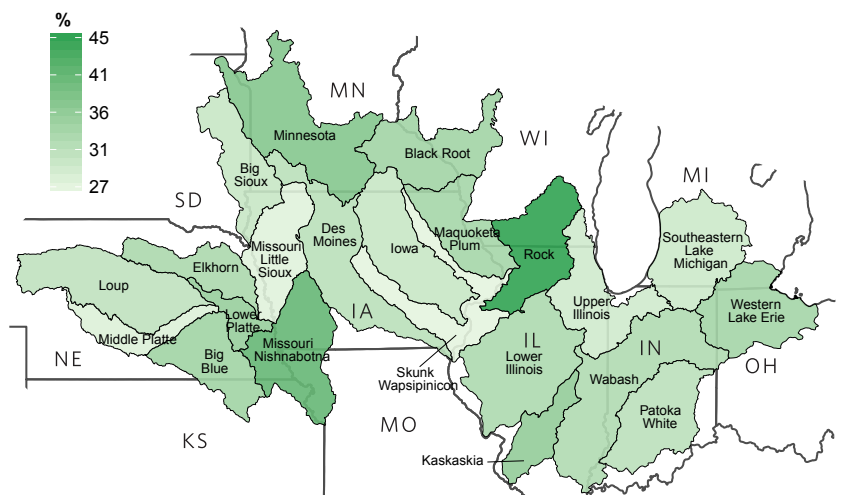


FIGURE 3 | Percent of farmers who believed that climate change is occurring, and it is caused more or less equally by natural changes in the environment and human activities.

Nearly one-third of respondents (31%) selected the category, “there is insufficient evidence to know with certainty whether climate change is occurring or not” (table 1). The watershed with the lowest percentage of farmers who selected this category was Missouri-Nishnabotna watershed (25%) and the one with the highest percentage (42%) was Elkhorn watershed (figure 4).

On average, across all watersheds, four percent of respondents selected the category, “climate change is not occurring” (table 1). Two percent of respondents in Upper Illinois, Rock, Maquoketa Plum, Minnesota and Missouri-Little Sioux watersheds selected this category, while six percent of respondents in Skunk Wapsipinicon watershed did not believe that climate change is occurring (figure 5).

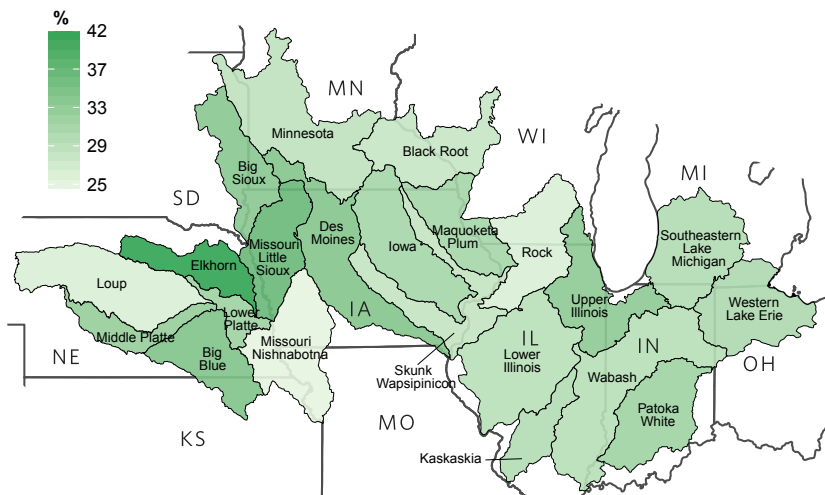


FIGURE 4 | Percent of farmers who believed that there is not sufficient evidence to know with certainty whether climate change is occurring or not.

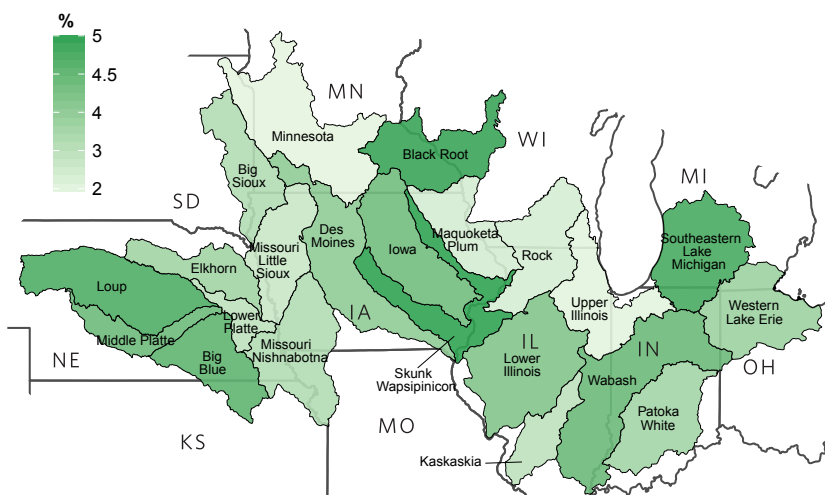


FIGURE 5 | Percent of farmers who believed that climate change is not occurring.



TABLE 1 | Beliefs about climate change by watershed, percent of farmers in each belief category.

Watershed (HUC6)	Climate change is occurring, and it is caused mostly by human activities	Climate change is occurring, and it is caused mostly by natural changes in the environment	Climate change is occurring, and it is caused by natural changes in the environment & human activities	There is not sufficient evidence to know with certainty whether climate change is occurring or not	Climate change is not occurring
All Watersheds	8	25	33	31	4
Loup	8	30	31	26	5
Middle Platte	7	28	28	33	4
Elkhorn	3	19	33	42	3
Big Blue	8	18	34	35	5
Lower Platte	6	24	35	32	3
Big Sioux	6	27	30	34	3
Missouri-Little Sioux	10	23	27	37	2
Missouri-Nishnabotna	9	23	40	25	3
Minnesota	8	25	37	29	2
Des Moines	5	25	32	35	4
Iowa	9	26	30	31	4
Black Root	8	24	34	28	5
Skunk Wapsipinicon	10	30	27	28	6
Maquoketa Plum	10	23	34	31	2
Lower Illinois	6	28	33	29	4
Rock	10	17	45	26	2
Kaskaskia	10	22	36	30	3
Upper Illinois	11	24	29	34	2
Wabash	7	26	33	30	4
Patoka-White	6	28	31	32	3
Southeastern Lake Michigan	9	26	30	30	5
Western Lake Erie	7	25	40	31	3

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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](http://sustainablecorn.org).



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