Corn Belt farmers' attitudes toward institutional support for adaptation to increased weather variability

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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.

Attitudes are subjective evaluations of a specific object, idea or policy. The survey collected data on farmers' attitudes toward a number of potential adaptive and mitigative actions. Adaptive actions are adjustments that farmers make as they anticipate or react to changing conditions that may place the farm enterprise at risk. Adaptive actions can be technological, economic, social, managerial, and/or institutional adjustments and are often motivated by intentions to reduce risk and vulnerability of the farm enterprise. Mitigative actions are those that reduce greenhouse gas emissions or sequester carbon.

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.

Survey Results

The survey measured farmers' attitudes regarding the role that four key organizations and agencies might play in helping them to prepare for increased weather variability. The four survey items were: (1) University Extension should help farmers to prepare for increased weather variability; (2) State and federal agencies should help farmers to prepare for increased weather variability; (3) Seed companies should develop crop varieties adapted to increased weather variability; and, (4) Farm organizations (e.g., Farm Bureau, Corn Growers) should help farmers to prepare for increased weather variability. The items were preceded by the text, "Organizations, agencies, and individuals can

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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.

do a number of things to prepare for or address potential changes in climate. Please provide your opinions on the following statements." Farmers rated the items on a five-point agreement scale from strongly disagree to strongly agree.

On average across all watersheds, 62% of respondents agreed that University Extension should help farmers to prepare for increased weather variability (table 1). Agreement with this statement was lowest in the Loup, Big Sioux, and Black Root watersheds, where 58% of respondents agreed that university extension should help farmers to prepare for increased weather variability, and highest in Middle Platte watershed (69%) (figure 1).

Across all watersheds 43% of farmers agreed that state and federal agencies should help farmers to prepare for increased weather variability (table 1). Respondents in Rock watershed had the lowest level of agreement (36%) and respondents in Patoka-White (48%) had the highest level of agreement with the statement (figure 2).

Most respondents (84%) agreed that seed companies should develop crop varieties adapted to increased weather variability (table 1). Agreement with this statement ranged from a low of 78% in Loup watershed to a high of 91% in Missouri-Nishnabotna watershed (figure 3).

More than half of respondents (52%) agreed that farm organizations should help farmers to prepare for increased weather variability (table 1). The level of agreement varied across watersheds, from a low of 44% in Big Blue watershed to a high of 61% in Upper Illinois watershed (figure 4).

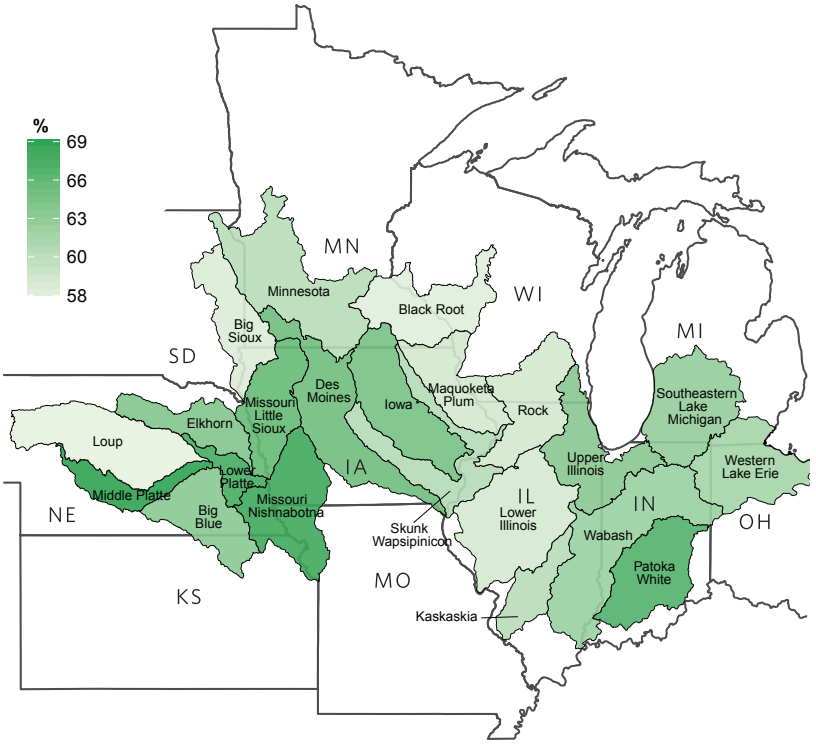

FIGURE 1 | University Extension should help farmers to prepare for increased weather variability, percent agree or strongly agree.

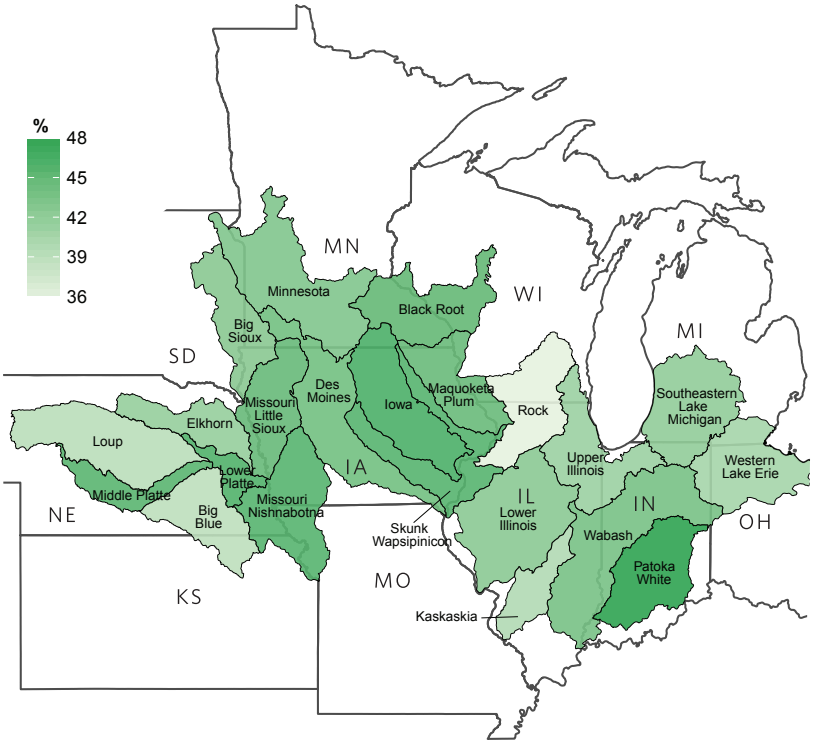

FIGURE 2 | State and federal agencies should help farmers to prepare for increased weather variability, percent agree or strongly agree.

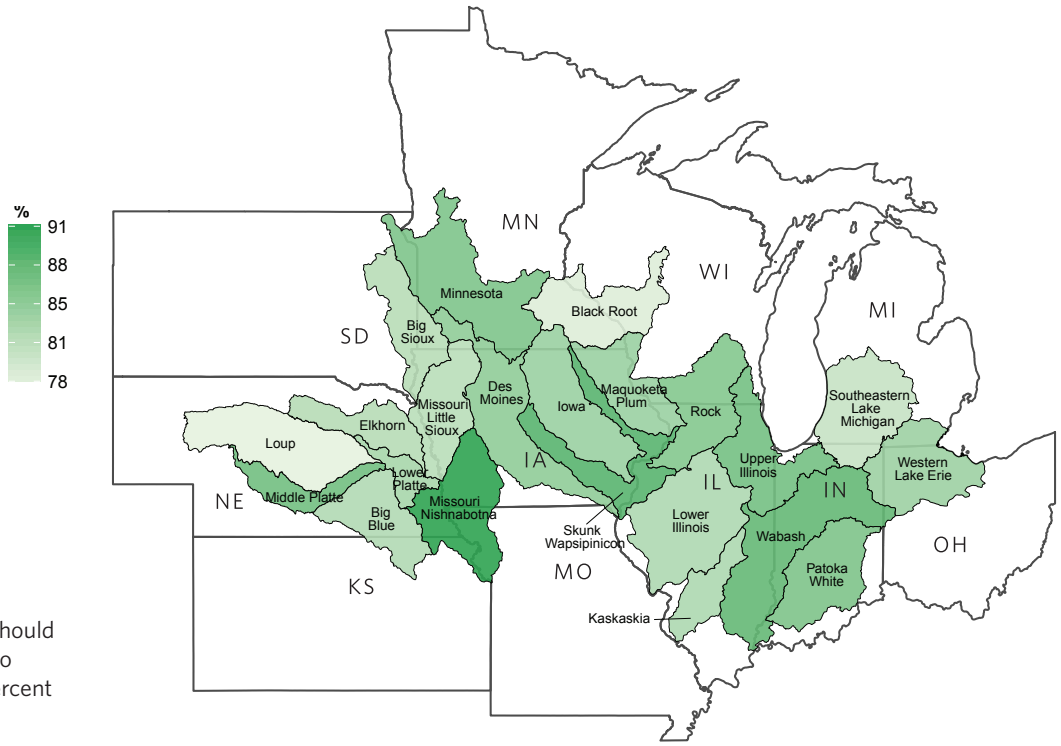

FIGURE 3 | Seed companies should develop crop varieties adapted to increased weather variability, percent agree or strongly agree.

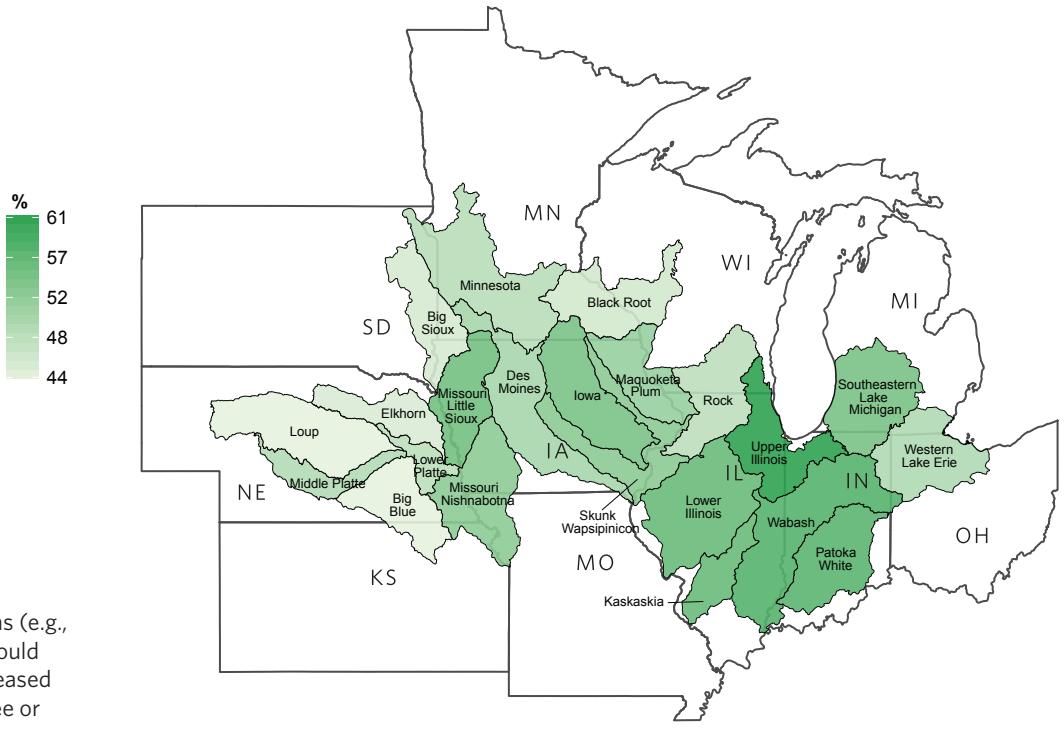

FIGURE 4 | Farm organizations (e.g., Farm Bureau, Corn Growers) should help farmers to prepare for increased weather variability, percent agree or strongly agree.

TABLE 1 | Attitudes[1] toward public sector and private sector's role in supporting adaptation actions, percent of farmers who agree or strongly agree, by watershed.

Watershed (HUC6)	University Extension should help farmers to prepare for increased weather variability	State and federal agencies should help farmers to prepare for increased weather variability	Seed companies should develop crop varieties adapted to increased weather variability	Farm organizations should help farmers to prepare for increased weather variability
All Watersheds	62	43	84	52
Loup	58	39	78	44
Middle Platte	69	45	87	49
Elkhorn	64	41	82	45
Big Blue	64	39	82	44
Lower Platte	67	46	83	48
Big Sioux	58	42	82	45
Missouri-Little Sioux	66	45	82	55
Missouri-Nishnabotna	68	45	91	53
Minnesota	61	43	86	48
Des Moines	65	44	85	50
Iowa	65	46	84	55
Black Root	58	45	79	46
Skunk Wapsipinicon	61	45	88	53
Maquoketa Plum	59	44	84	52
Lower Illinois	59	42	82	56
Rock	59	36	86	48
Kaskaskia	61	39	83	56
Upper Illinois	64	41	87	61
Wabash	63	43	88	58
Patoka-White	67	48	86	57
Southeastern Lake Michigan	63	42	81	55
Western Lake Erie	62	40	84	49

[1]Attitudes were measured on a 5-point agreement scale: strongly disagree, disagree, uncertain, agree, strongly agree.

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