

Farmer Perspectives on Agriculture and Weather Variability in the Corn Belt: A Statistical Atlas



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For more information contact:

Climate and Corn-based Cropping Systems CAP
317 East Hall
Iowa State University
Ames, Iowa 50011-1070

E-mail: info@sustainablecorn.org
Website: sustainablecorn.org

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Layout and preparation by Renea Miller, Iowa State University

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1 Study Overview

There is mounting consensus that long-term shifts in annual averages and seasonal patterns of precipitation, temperature, and humidity, as well as more erratic and extreme weather events leading to increased risk of floods, drought and fire (Coumou and Rahmstorf 2012), will continue into the foreseeable future (Beddington et al. 2012; IPCC 2007; NRC 2010a). Projected impacts on agriculture include redistribution of water availability and compromised quality, increased soil erosion, and decreased crop productivity (Hatfield et al. 2011; Howden et al. 2007; McCarl 2010). These threats to agricultural sustainability threaten food security and quality of life, leading to increasingly urgent calls for the development of effective adaptation strategies for agriculture (e.g., Coumou and Rahmstorf 2012; Howden et al. 2007; McCarl 2010; Walthall et al. 2012).

In response to these concerns, in 2011 the USDA funded the Climate and Corn-based Cropping Systems CAP (CSCAP).¹ The CSCAP is a transdisciplinary partnership among 11 institutions creating new science and educational opportunities. The CSCAP seeks to increase resilience and adaptability of Midwest agriculture to more volatile weather patterns by identifying farmer practices and policies that increase sustainability while meeting crop demand (<http://www.sustainablecorn.org>).

The effectiveness of any adaptation or mitigation action in Corn Belt agriculture depends on the degree to which the region's farmers are willing and able to act. Little is known, however, about farmers' perspectives on these critical topics. Thus, a primary objective of the CSCAP is to conduct social science research that assesses farmer understanding of climate change and attitudes toward adaptive and mitigative practices and strategies. Toward that end, a survey of Corn Belt farmers was conducted in February and March 2012. The survey was carried out in partnership with the Useful to Usable (U2U) project (www.AgClimate4U.org), another USDA-funded climate and agriculture project.

The CSCAP-U2U survey was sent to a stratified random sample of 18,707 farmers with at least US\$100,000 of gross sales and a minimum of 80 acres of corn production in 22 six-digit Hydrologic Code Unit (HUC) watersheds (see Appendix A for a comprehensive account of survey methods). The 22 watersheds cover a substantial portion of 11 Corn Belt states—Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, Ohio, South Dakota, and Wisconsin (see Maps 1 and 2)—all of which are classified as “major crop areas” for corn and soybean (USDA 1994). Completed surveys were received from 4,778 farmers for an effective response rate of 26%.

This report provides an overview of the CSCAP-U2U survey results by watershed.² Each section contains a tabulated presentation of survey data and a series of maps that visually represent the distribution of responses across the entire study region.

It is our hope that the maps in this document will be useful to extension educators and other stakeholders that work with the agricultural community. To lift a map for use in a Powerpoint presentation or other document, simply use the “Take a Snapshot” tool in the Edit Menu of Adobe Reader or Adobe Acrobat to capture the image, then paste it into your presentation or other document. If you require higher resolution images than your default settings provide, go to the Edit Menu, then Preferences, then General. Click the box for “Use fixed resolution for Snapshot tool images” and increase the pixels/inch until the quality is sufficient (150 is a good place to start). Please cite this report as the source.

¹ The USDA has funded numerous projects that focus on climate change adaptation and mitigation in agriculture (<http://www.csrees.usda.gov/fo/climatevariabilityandchangeafri.cfm>).

² For initial results over the entire region please see Arbuckle et al. (2013).