



Extreme Weather and the Food System

Maria Kalaitzandonakes and **Jonathan Coppess**

Department of Agricultural and Consumer Economics
University of Illinois

Brenna Ellison

Department of Agricultural Economics
Purdue University

September 20, 2023

farmdoc daily (13): 171

Gardner Policy Series

Recommended citation format: Kalaitzandonakes, M., J. Coppess, and B. Ellison. “[Extreme Weather and the Food System](#).” *farmdoc daily* (13): 171, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, September 20, 2023.

Permalink: <https://farmdocdaily.illinois.edu/2023/09/extreme-weather-and-the-food-system.html>

Orange smoky skies. Heat advisories. Long, heavy rains. This summer brought several memorable extreme weather events across the US. In mid-July over 32 states were affected by poor air quality from wildfires in Canada ([Hauser, C. and Moses, C. 2023](#)) and in late July, about 60% of the US population was under heat or flood advisories ([Costley, D; Frederick, J.B; and Vejpongsa, T. 2023](#)). And while agriculture is no stranger to managing the risk of difficult weather, research has shown that extreme weather events are more likely to occur and may become more intense due to climate change (see [EPA, 2023, IPCC, 2021](#)).

In this article we discuss public experiences with extreme weather events. We also explore public preferences for government policy to address climate change and extreme weather and whether recent extreme weather events have impacted confidence in the food system. To do so, we utilize results from the Gardner Food and Agricultural Policy Survey (GFAPS), which surveys approximately 1,000 US consumers online each quarter (see *farmdoc daily*, [September 11, 2023](#) for more information). We close with a review of public support for policy responses to climate change and extreme weather events related to agriculture specifically using our tracked measures from GFAPS.

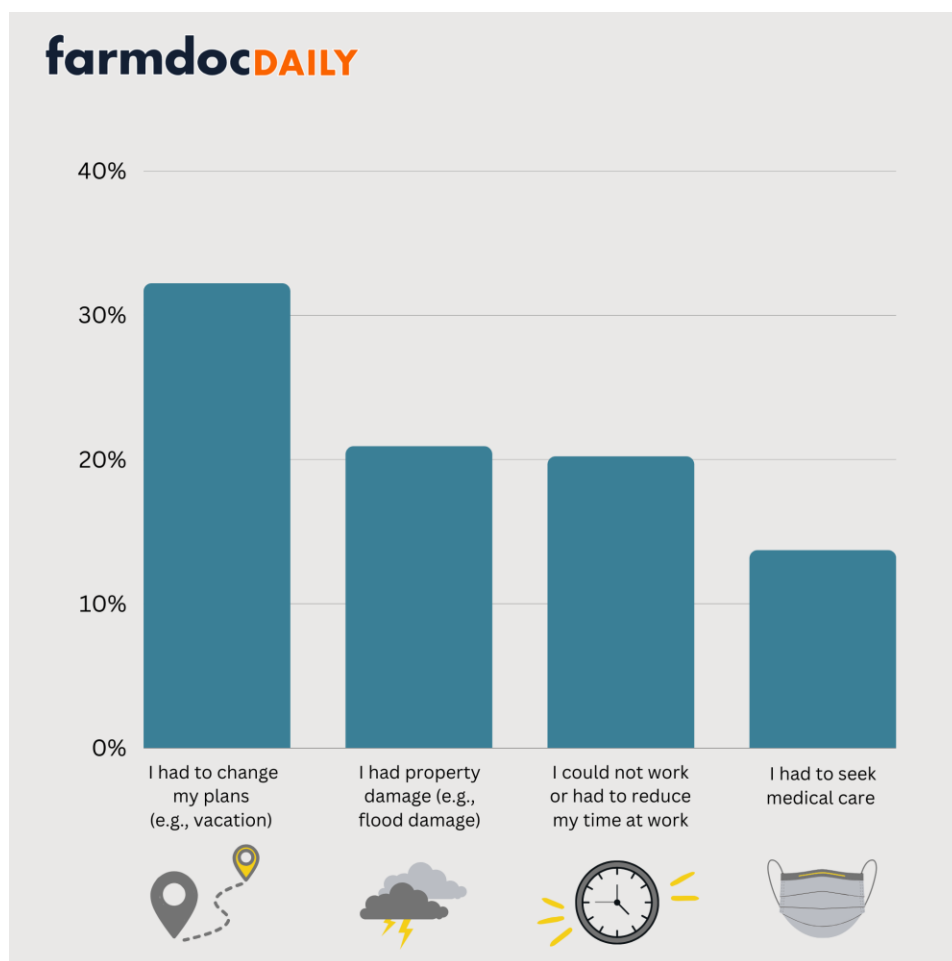
Participants’ Experiences with Extreme Weather Events

We begin by discussing how participants in the most recent wave of the Gardner Food and Agricultural Policy Survey (conducted in August 2023) were impacted by extreme weather this summer. Generally, consumers were well aware (84.2%) of the extreme weather events going on in the US over the summer. Over two-thirds (68.6%) of participants indicated they had directly experienced at least one extreme weather event this summer.

We request all readers, electronic media and others follow our citation guidelines when re-posting articles from farmdoc daily. Guidelines are available [here](#). The farmdoc daily website falls under University of Illinois copyright and intellectual property rights. For a detailed statement, please see the University of Illinois Copyright Information and Policies [here](#).

As extreme weather can have a variety of impacts – from health implications to property damage – we asked four follow-up questions to understand more about participants’ personal experience with the weather events (see Figure 1). We find that the most common experience (affirmed by 32.2% of participants) was having to make changes to their plans due to the recent extreme weather events. We also find that 20.9% of participants said they had property damage from extreme weather. About one in five participants (20.2%) said they couldn’t work or had to reduce work time due to extreme weather – of these, nearly 60% said they work outdoors. Finally, 13.7% said they had to seek medical care because of extreme weather.

Figure 1. Percent of Participants Who Indicated They Were Affected By Extreme Weather Events This Summer in Different Ways



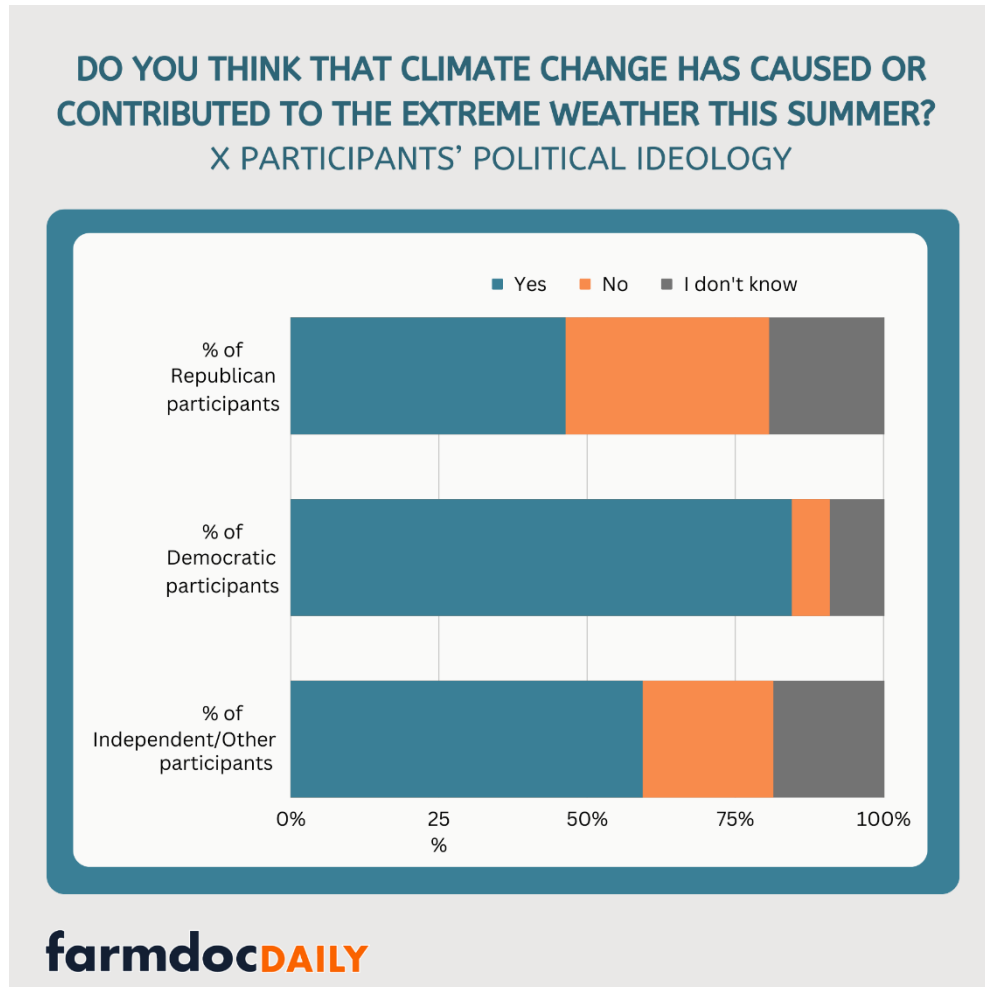
Extreme Weather Events, Climate Change, and Politics

Climate change continues to be politically sticky in the US (e.g., [Tyson A; Funk, C; and Kennedy, B; 2023](#)), which is likely to have implications for the ongoing farm bill debate. The Gardner Food and Agricultural Policy Survey has continued to explore areas that might present common ground and possibilities for farm bill negotiations (e.g., *farmdoc daily*, [March 10, 2023](#)).

While experience with extreme weather was quite common across political affiliation in our survey – 68.3% of Republican participants, 70.8% of Democratic participants, and 66.9% of Independent/Other participants indicated they had directly experienced at least one extreme weather event this summer – whether or not participants thought climate change had caused or contributed to the extreme weather events was quite different depending on political views or affiliations. Figure 2 shows that 84.4% of

Democratic participants, 46.3% of Republican participants, and 59.3% of Independent/Other participants thought climate change had caused or contributed to the summer's extreme weather events.

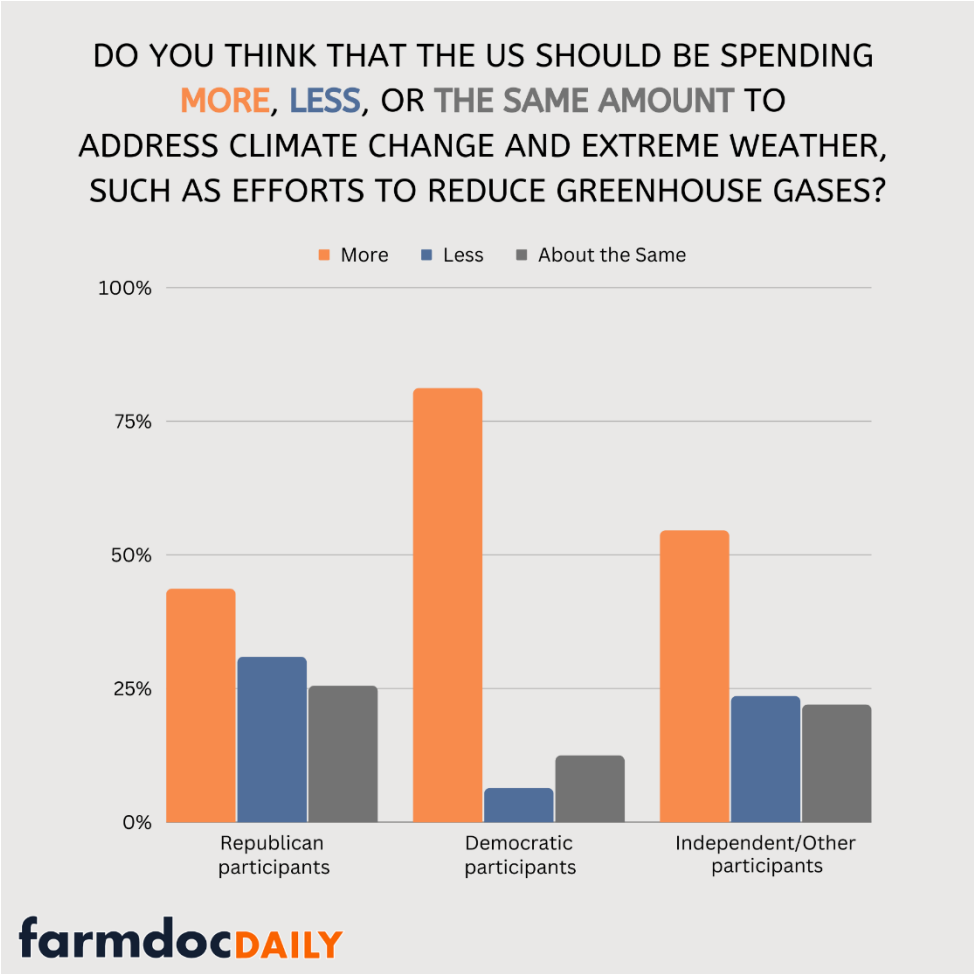
Figure 2. Participant Beliefs about the Relationship Between Climate Change and Extreme Weather Events in Summer 2023 by Political Ideology



We also asked whether participants thought the US should be spending more, less, or the same amount to address climate change and extreme weather, such as efforts to reduce greenhouse gases. Here again, the results differed substantially by political affiliation. Figure 3 shows that the highest level of support for increased spending to address climate change and extreme weather were Democratic participants (81.1%), followed by Independent/Other participants (54.5%), and then Republican participants (43.6%).

Still, more than 65% of participants across political ideologies support the current level or increased spending to address climate change and extreme weather, which indicates spending cuts on the topic are likely to be unpopular.

Figure 3. Preferences for Government Spending to Address Climate Change and Extreme Weather by Political Ideology

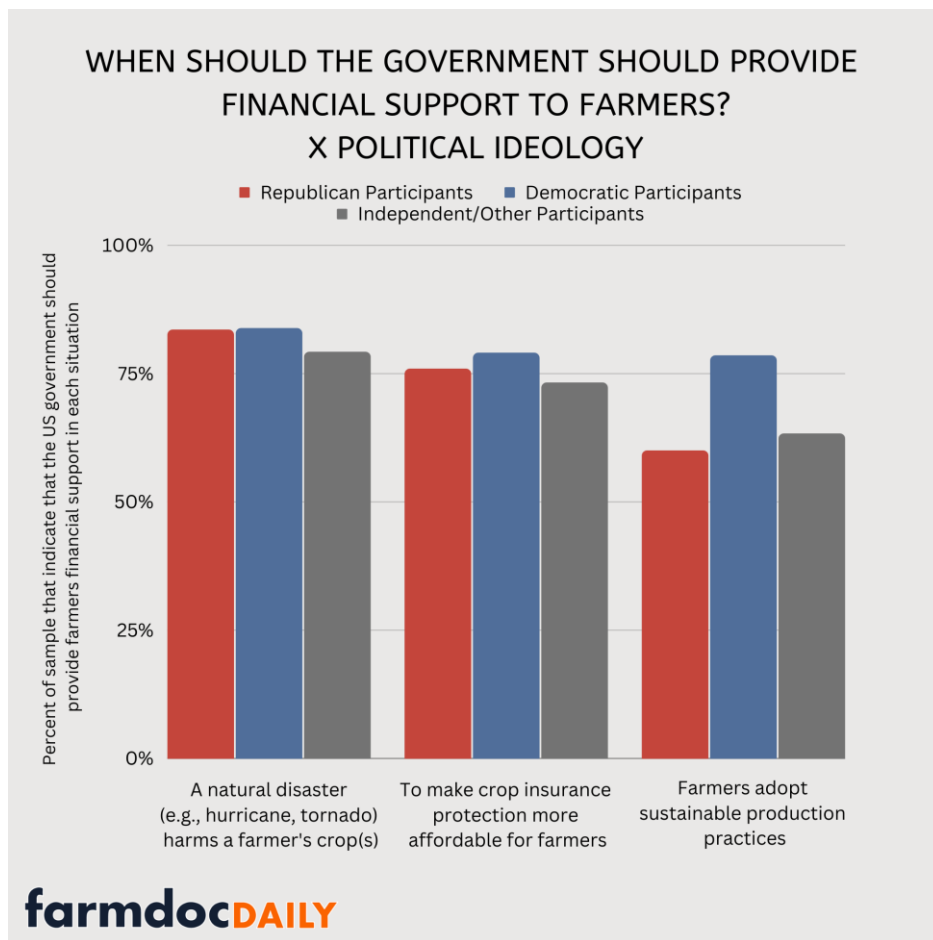


While results from this post suggest consumers are somewhat split, along political party lines, in supporting government spending to mitigate the effects of climate change and extreme weather more broadly, results from our tracked measures indicate there may be some common ground when it comes to supporting mitigation efforts for the agricultural industry specifically.

Across waves, we noted that US consumers express strong support for the government providing support to farmers: 1) when a natural disaster harms a farmer’s crops (>75% each wave); 2) to make crop insurance more affordable, which can protect farmers financially against the negative impacts of climate change and extreme weather (>70% each wave); and 3) when farmers adopt sustainable production practices (>65% each wave) (e.g., *farmdoc daily*, [March 10, 2023](#)). Support for these policy responses has continued throughout the 2nd year of the Gardner Food and Agricultural Policy Survey.

In Figure 4, we show these results from the most recent wave across participants’ political ideology. Payments for farmers following a natural disaster was well-supported across political ideology. Similarly, government funds being utilized to improve affordability of crop insurance was also well-supported across political ideology. Although there were larger differences in support across payments for farmers adopting sustainable production practices, over 50% of Republican, Democratic, and Independent/Other participants agreed this type of support should also be provided to farmers. This is in line with previous research that has underscored that removing climate change attribution from extreme weather discussion can improve support for policies and politicians from Republicans ([Hai, Z. and Perlman, R; 2022](#)).

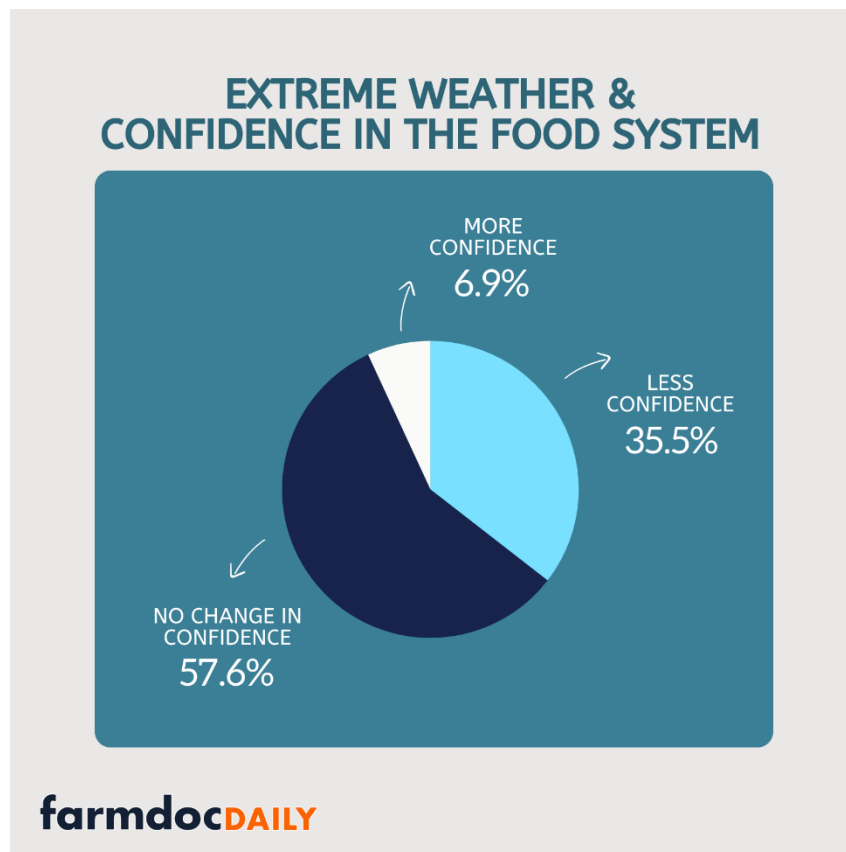
Figure 4. Percent of Participants that Agree the Government Should Provide Financial Support to Farmers in Various Situations by Political Ideology



Has Extreme Weather Impacted Confidence in the Food System?

Finally, we asked participants how the extreme weather events this summer impacted their confidence in the food system (see Figure 5). The majority of participants (57.6%) said the events did not affect their confidence in the food system, 35.5% of participants said they now had less confidence in the food system, and 6.9% of participants said they now had more confidence in the food system.

Figure 5. How Participants Say This Summer's Extreme Weather Events Impacted Their Confidence in the Food System



Closing Thoughts

The impacts of recent extreme weather events have been felt widely among US households based on the results from the August 2023 wave of the Gardner Food and Agricultural Policy Survey. Responses in August show that US consumers have been impacted in several ways, from changing plans (e.g., vacation) to experiencing property damage, missing work, and seeking medical care.

Despite widespread awareness of and experience with the impacts of extreme weather, there is less consensus among consumers about the relationship between climate change and extreme weather events. There remains a wide disparity between those who identify as Republicans and those who identify as Democrats or Independents. Such beliefs track with mixed support for more government spending efforts to address climate change and extreme weather events. However, there continues to be common ground across political parties in responding to and mitigating extreme weather events for the agricultural industry specifically.

Finally, while recent extreme weather events have reduced confidence in the food system for some consumers, the majority report no change.

References

Costley, D; Frederick, J.B; and Vejpongsa, T. [“Extreme heat moves east where many will see their hottest days of the year.”](#) AP News. July 28, 2023.

EPA. [“Climate Change Indicators: Weather and Climate.”](#) US Environmental Protection Agency. 2023.

Hai, Z. and Perlman, R.L. “Extreme weather events and the politics of climate change attribution.” *Sci. Adv.* 8, eabo2190. 2022. DOI:[10.1126/sciadv.abo2190](#)

Hauser, C. and Moses, C. "[Smoke Pollution From Canadian Wildfires Blankets U.S. Cities, Again.](#)" *The New York Times*. July 17, 2023.

IPCC. Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Masson-Delmotte, V., P. Zhai, A. Pirani, S.L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M.I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T.K. Maycock, T. Waterfield, O. Yelekçi, R. Yu, and B. Zhou (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 2391 pp. doi:10.1017/9781009157896.

Kalaitzandonakes, M., J. Coppess and B. Ellison. "[GFAPS Results: Consumer Perception of Food System Affordability Drops.](#)" *farmdoc daily* (13):164, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, September 11, 2023.

Kalaitzandonakes, M., B. Ellison and J. Coppess. "[Promoting Sustainable Agricultural Production in the Next Farm Bill: Is There Any Common Ground?](#)" *farmdoc daily* (13):44, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, March 10, 2023.