

Farmers' Climate Change Attitudes: Past, Present and Future Perspectives

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Issue

Climate change is a global environmental issue that is expected to have a wide variety of effects throughout the world. Individual perceptions of climate change can influence behavior to adapt to and mitigate climate change. The agricultural community is one sector that has the potential to reduce their greenhouse gas (GHG) emissions through the adoption of a variety of practices, which may also provide individual farmers with significant benefits. As well, the agricultural sector may be heavily affected by future changes in water and temperature, which may require farmers to implement new farming practices to adapt to changing conditions. This brief discusses farmers' climate change attitudes and beliefs based on a survey of farmers in Yolo County, CA.

Key Findings

- A slight majority of farmers agree (54%) that the global climate is changing. Fewer agree that global temperatures are increasing (38%) and that human activities are an important cause of climate change (35%).
- Many farmers believe that climate change poses risks to agriculture globally (53%), but many also believe that climate change presents opportunities for agriculture globally (45%).
- Many agree that the risks of climate change will outweigh the benefits more at a global level than a local level.
- Most farmers believe past climate conditions have been stable, with water availability as a notable exception.
- Farmers are most concerned about future climate impacts related to policies and markets followed by moderate concern about water supply.
- Nearly 20% of farmers are uncertain about climate change risks, existence, and past changes.

Policy & Management Implications

As California continues to develop its cap and trade policy, which may allow farmers to receive payment for voluntarily implementing changes to reduce GHG emissions, it is important to recognize diverse farmer perspectives about climate change. Understanding farmer perspectives and concerns is necessary to design appropriate policies, outreach, and education initiatives. In designing policy incentives, it is important to consider the types of practices that farmers may be interested in based on their perceived future impacts. For example, farmers appear to be concerned about water related issues, and therefore may be more likely to adopt water-related practices such as drip irrigation, though these practices may have tradeoffs as well. Farmers are highly concerned about future regulations and changing markets, which suggests that policymakers should continue to engage with the agricultural sector as new policies are developed. Outreach and education initiatives should also consider market challenges and opportunities as potential climate change impacts.

Methodology

Interviews with 11 farmers and 2 Cooperative Extension farm advisors in Yolo County, CA were conducted in late 2010 to understand farmers' climate change perspectives, management strategies, and potential for adopting new practices in the future. Interviews were used to help design a survey along with input from local agricultural organizations, farmers, and industry. A total of 572 surveys were sent to farmers in Yolo County in February 2011. In total 162 surveys were analyzed (33.2% response rate). Survey

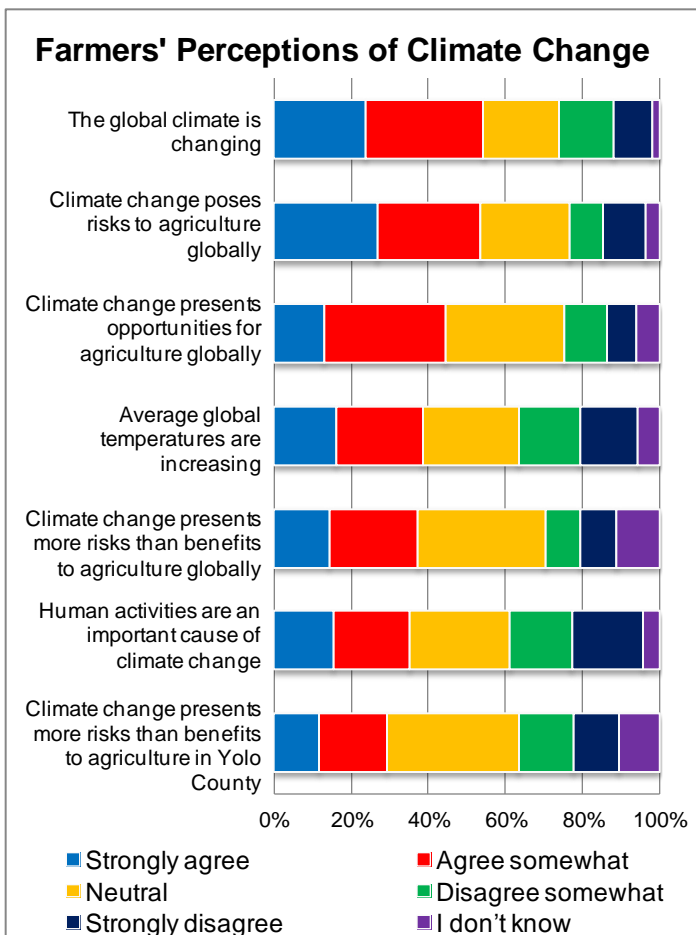


Figure 1. Farmer responses to a series of questions related to climate change belief, risk and opportunities.

questions asked farmers about their farm characteristics, management strategies, existing practices, climate change perspectives, and likelihood to adopt mitigation and adaptation practices in the future.

Detailed Results

Figure 1 describes farmers' perceptions related to climate change beliefs, risks, and opportunities ranked in order of agreement. Overall, 54% of farmers agreed that the global climate was changing, while fewer agreed that global average temperatures are increasing (38%) and that human activities are contributing to climate change (35%). Fifty-three percent of farmers agree that climate change poses risks to agriculture globally, but nearly 45% believe there are global opportunities as well. When asked to consider both risks and opportunities, more than 37% felt agriculture faces more risks than benefits globally, while only 29% agree with the statement at a Yolo County level. Approximately 11% of farmers indicated uncertainty about climate change risks and benefits both locally and globally.

Overall most farmers do not perceive major changes in past climate (Figure 2). One notable exception is the availability of water, which 43% of farmers believe has decreased over time. A smaller minority (21%) believe that summer temperatures have actually decreased over time in Yolo County. Though most farmers didn't perceive increases in temperatures or water over time, 15% of farmers did believe that the frequency of drought had increased. A notable number of farmers indicated uncertainty in changes in climate, with "I don't know" responses ranging from 10% (water availability) to 18% (frequency of drought).

Farmers showed varying levels of concern for future climate related impacts with clear distinctions among different categories (Figure 3). Economic and regulatory concerns including increased government regulations, increased fuel and energy prices, and volatile markets were of the greatest concern. Water-related impacts were a more moderate concern, with lack of water (less reliable water sources and droughts) being more of a concern than increased flooding. Finally, farmers were less concerned with future temperature impacts such as warmer temperatures or a loss of winter chill hours, even though climate data shows a notable decrease in winter chill hours and winter temperatures in the past in Yolo County.

Future Research Directions

This brief highlights farmers' attitudes related to climate change beliefs, risks, and potential impacts. Future briefs and analysis will consider what influences the adopt climate change practices. Additional survey work might also examine the climate change practices that have already been implemented and broaden the survey region to include other California counties or regions outside of the state. Research to link natural science and social science is also needed to determine whether farmers' attitudes are correlated with objective climate and water assessments and models over time.

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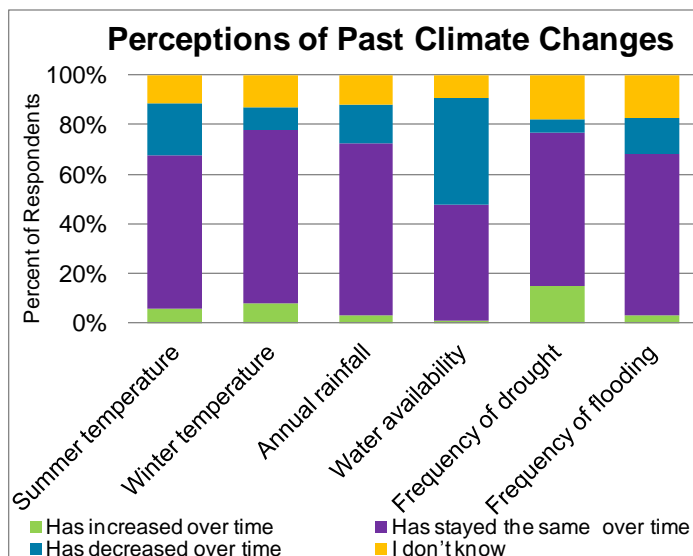


Figure 2. Farmer's past climate change perspectives in Yolo County, California.

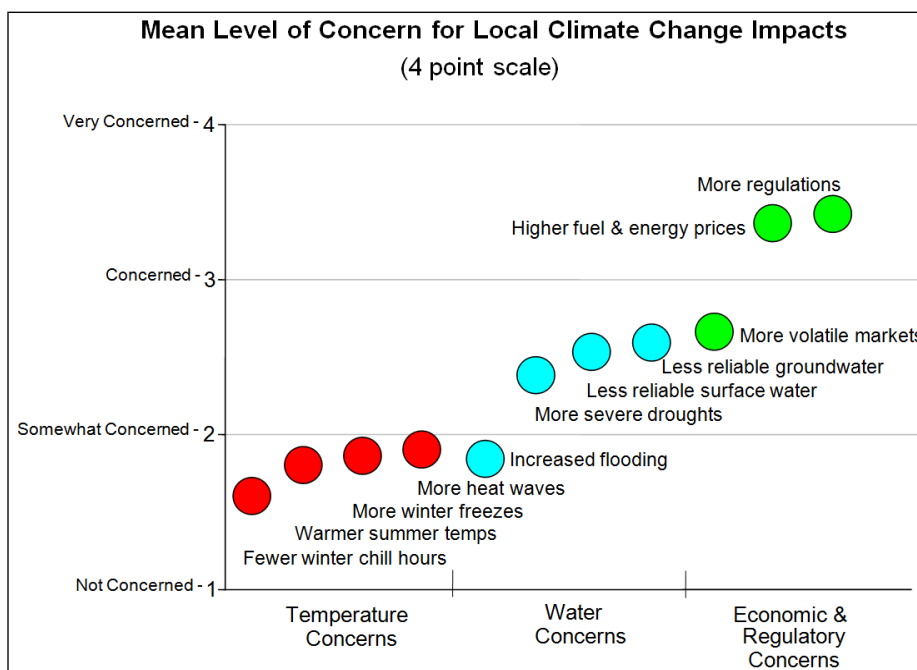


Figure 3. Average concern for future climate change related impacts among farmers in Yolo County, California.