

Informing the Debate

Residents Support Farmers Adapting to Climate Change:

**A Survey of Attitudes
toward Government Assistance
to Crop Farmers**

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Executive Summary

A statewide survey of Michigan residents explores attitudes towards government assistance to farmers as they adapt cropping systems to climate change. We find strong support for government programs to assist farmers. Michigan residents were answering our questions during a period of unusual early spring warmth that damaged fruit crops. We recorded a short-lived increase in public support for farmer adaptation to climate change during the warm spell.

Overview of the Issue

According to the National Aeronautics and Space Administration (NASA), global surface temperatures have been rising for several decades (Figure 1). There is debate about the source of the temperature trends, but there are implications for one of Michigan's major industries: agriculture. As shown in Figure 2, some global climate projections imply that the northern part of the US could be one of the few regions

worldwide that experiences strong increases in agricultural productivity under long-term climate change (UNEP/GRID-Arendal, 2012). While long-term productivity could increase in our region, farmers will need to adapt to new conditions and there's concern that agriculture's

positive contribution to Michigan economic growth could be threatened by increased variability in yields. Farmers may need to adapt cropping systems, moving towards crops that tolerate heat or temperature swings, and adapt to a longer growing season.

Figure 1: NASA Long-Term Global Surface Temperature Estimates

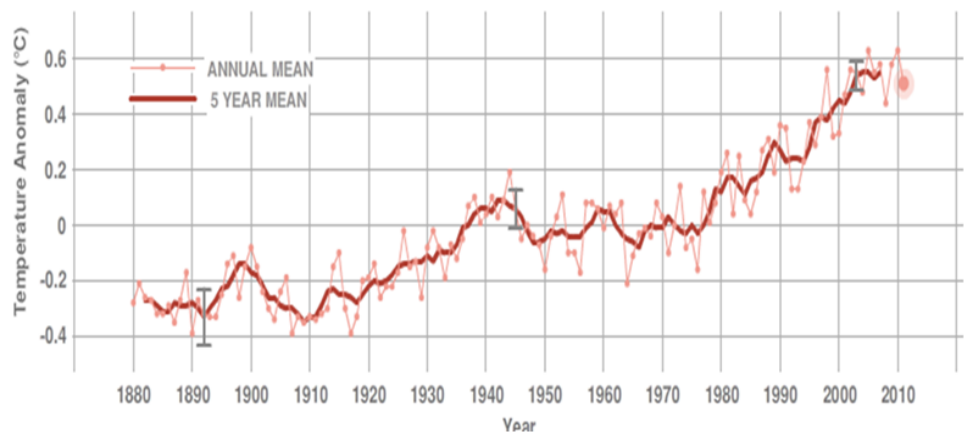
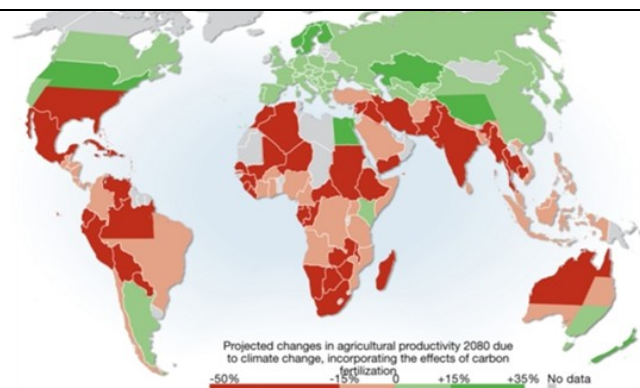


Figure 2: Projected Changes in Agricultural Productivity Under Long-Term Climate Change



In Michigan

By some estimates, agriculture and related processing services account for \$71B, while more conservative estimates focusing on farm sales put the figure at a much more modest \$2.71B (Preddy, 2011). What is clearer is that Michigan's agriculture has been on an upswing due to high commodity prices and strong exports.

Other US states are taking steps to help agriculture respond to threats and opportunities associated with climate change:

- In California, state government is promoting an "adaptation strategy for agriculture" that involves water conservation and research on hardier varieties. (State of California, nd.)
- In Kansas, a gubernatorial commission recommends incorporating climate change adaptation into emergency plans and policies for agriculture (among other sectors). (Cruce, 2009, p.8.)
- In Washington, the State Department of Ecology is recommending help for growers to select "more economically and ecologically resistant crops". (State of Washington, 2012, p. 131.)
- In Oregon, the Agriculture Technical Committee of Oregon Global Warming Commission is recommending investments in irrigation efficiency. (Oregon Global Warming, Commission, 2010, p. 100.)

Relevant Research

The study relied on Michigan State University's State of the State Survey to examine residents' attitudes related to government support for farmers adapting their cropping systems to climate change (see text box for more on the survey design). We asked several questions, summarized below.

Crops are sensitive to climate. If the climate changes, farmers may need to adjust their cropping systems by using new practices or by planting different varieties. Now, I am going to read you some more statements about climate change and ask to what extent you agree or disagree.

The Michigan state government has a role in helping Michigan corn and soybean farmers adjust to long-term changes in the climate.

The Michigan state government has a role in helping Michigan fruit and vegetable farmers adjust to long-term changes in the climate.

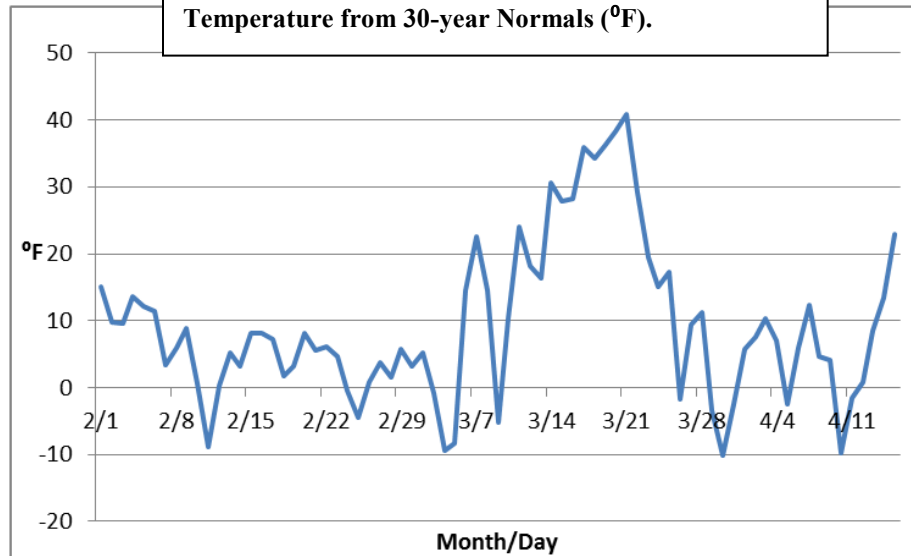
Questions 1 and 2 were repeated with the sole change of "United States" for "Michigan state." The set of four questions were presented to the respondent in random order.

Each of the statements was followed with a question asking the respondent to rate the statement on a four-point agreement scale (strongly agree, somewhat agree, somewhat disagree, strongly disagree). Over 960 randomly selected adult Michigan residents answered the survey.

Finally, respondents were asked if they would support an increase in their yearly taxes to pay for a program to help Michigan farmers

“assure a safe and reliable food supply by adjusting to climate change through better varieties and techniques” and a follow-up as to whether they could favor the program if there were no tax increase.

Figure 3: Spring 2012 Difference of Daily Maximum Temperature from 30-year Normals (°F).



In early March, a bit more than halfway through the data collection period, Michigan experienced an abnormal warm spell during which daily highs statewide were as much as 40 degrees Fahrenheit above normal (Figure 3). Estimated damage to perennial crops due to early flower emergence and subsequent frost was as high as 90%, with mainstream media reports focusing on fruit damage. We suspected that unusual weather might affect the survey responses, so we provide information about the attitudes before, during, and after the March 10-25 warm spell.

Our results for Michigan state government action are presented in Table 1. The results for the questions focusing on the national government’s role were broadly similar. In all cases, and irrespective of crop type, over 60% of respondents strongly or somewhat agreed that government has a role to play in helping farmers adapt to long-term changes in the climate. While our data provides some evidence of an increase in willingness for government support for farmers in the first week of the high March temperatures, agreement with government assistance quickly dropped back to levels more closely resembling the pre-event levels. The temporary increase in agreement with Michigan government help for fruit/vegetable farmers was both higher and of longer duration than it was for corn and soybean farmers—crops that were not directly affected by the March weather as they were not yet planted.

Assist Corn/Soybean Farmers with Climate Adaptation					
	Before Warm Spell	1st Week of Warm Spell	2nd Week of Warm Spell	After Warm Spell	Full Sample (all dates)
Strongly Agree	25.5%	26.6%	21.7%	13.8%	22.4%
Somewhat Agree	40.5%	46.7%	38.7%	47.3%	43.1%
Subtotal	66.0%	73.3%	60.3%	61.2%	65.5%
Somewhat Disagree	20.9%	7.8%	15.7%	17.2%	16.8%
Strongly Disagree	10.2%	15.1%	17.0%	17.6%	13.8%
Don't know	2.9%	3.9%	7.0%	4.0%	3.9%
Assist Fruit/Vegetable Farmers with Climate Adaptation					
Strongly Agree	18.6%	29.7%	21.9%	13.4%	19.9%
Somewhat Agree	47.9%	46.5%	49.3%	50.6%	48.5%
Subtotal	66.5%	76.2%	71.2%	64.1%	68.4%
Somewhat Disagree	19.2%	8.4%	9.4%	17.3%	15.4%
Strongly Disagree	9.6%	13.3%	7.1%	17.4%	11.9%
Don't know	4.7%	2.1%	12.3%	1.3%	4.4%

Implications for Michigan

While the public may be skeptical about whether climate change is occurring, whether humans are causing the change, and whether policies designed to reduce climate change are worthwhile, a majority of Michigan residents appear to accept a role for government in assisting farmers in their efforts to adapt to climate change. This apparent contradiction may be a result of sympathy for the state's agricultural industry and for growers, confidence in the ability of science to address adaptation options for agriculture, perceived modest overall cost of crop adaptations, or the likelihood that many of the benefits are captured locally through on-farm productivity improvements. It is also possible the public recognizes the long-term food security risk associated with failure to set in place policies that could help prepare for possible changes in our agricultural systems, even if they are skeptical about the magnitude, causes, or direction of projected climate change.

Recommendations

An implication for agricultural leaders may be that they could increase public support for agricultural research through consistent and factual press releases and information campaigns about impacts of unseasonal weather such as Michigan experienced in March and possible effects of longer-term projected climate changes on farm-level productivity. The publicity about the impact of the March 2012

warm spell may have served to increase, at least temporarily, public support for government assistance in helping farmers adapt to climate change. More consistent messaging about potential threats and opportunities associated with climate change in the agricultural sector could garner public support to further help farmers transition more smoothly to climate conditions that may emerge consistent with science-based crop projections.

Conclusion

A majority of Michigan residents seem to support the notion of state and federal government action in support of helping farmers adapt to climate change. This support was present before and after the unseasonal warm spell that occurred in the middle of the survey period, indicating that the overall result is independent of the odd spring 2012 weather patterns. While there was a temporary surge in support for farmer adaptation to climate change during the warm spell, the overall support is likely more strongly linked to other considerations such as concern about recent food price fluctuations, long term food security, or recognition of agriculture's contributions to the Michigan economy.

Note on Survey Design

This report summarizes data collected in a telephone survey of 963 randomly selected Michigan adult residents between February 14 and April 15, 2012. Conducted by IPPSR's Office for Survey Research at Michigan State University, this survey was part of the larger State of the State Survey (SOSS). Details of the methods are posted at <http://ippsr.msu.edu/SOSS/SOSS.HTM>. The margin of error is $\pm 3.1\%$ at a 95% confidence interval.

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