

Kristin Babbie¹, Julie Doll¹, and Diana Stuart¹
¹Kellogg Biological Station, Michigan State University

Introduction

Farmland covers approximately 40% of the nation's landscape, thus having a significant impact on the environment.¹ Agriculture is a unique industry in that it both emits and consumes greenhouse gases.² Generating about \$55 billion annually, Michigan's economy is highly dependent on agriculture.³ For these reasons, it is crucial to explore how Michigan farmers shape their perceptions on climate change and use them to make decisions about their farming practices. It is also important to learn and discuss with farmers about how agriculture can adapt to and mitigate climate change.

Research questions

- 1.) How do vegetable growers who sell at farmers markets in Western Michigan perceive climate change?
- 2.) Where do they obtain their information on climate change and agriculture?
- 3.) To what extent does this information influence their decisions regarding food production, distribution, and marketing?

Methods

In June and July of 2011 I interviewed 11 vegetable growers who sell at farmers markets in Western Michigan. The sample was gathered by: meeting farmers at the local farmers market, contacting farmers listed on the LocalHarvest website, and through referrals from other farmers. All interviews were tape recorded and facilitated in person either at a farmers market or at the farmer's home. The average length of an interview was about 20 minutes. Each farmer was asked an identical set of questions and was asked indicate on a form where they access information about climate change and agriculture. All interviews were then transcribed and analyzed using thematic content analysis and descriptive statistics. All data collected was kept anonymous. Thank you notes and LTER hats were given to each farmer. Farmers were not compensated monetarily for their participation.

Results

1. PERCEPTIONS OF CLIMATE CHANGE

"I feel like we've had more severe weather the past few years and that has been a challenge for us farming."

• Figure 1 (right) displays the most common themes found in farmers' thoughts on climate change. "Short-term changes in weather" was the most common theme. Some farmers described that politics and/or the media was undermining the scientific support of climate change.

• Farmers were split on if climate change is affecting farming: 5 said yes, 4 said no, and 2 were not sure. Conversely, 9 out of 11 farmers thought that farming is affecting climate change. 3 voluntarily stated that they thought their farming had a positive effect on the climate.

Figure 1

Common Themes in Responses to the Question: "What are the first thoughts that pop into your head when you hear 'climate change?'"
6 thought of short-term changes (< 30 yr) in weather
3 thought of climate change as in conflict with politics and science
2 thought of long-term changes (> 30 yr) in weather
2 were skeptical that humans had an impact on climate change
1 was skeptical that climate change is happening
*N=11; some farmer's responses matched more than one theme.

2. INFORMATIONAL SOURCES ABOUT CLIMATE CHANGE

"I would like to see I guess more real scientific evidence about what is actually happening."

Figure 2

Farmer Responses to the Question: "Where would you like information related to agriculture and climate change to come from?"	Farmer Responses to the Question: "What is your top source for information on climate change and agriculture?"
<ul style="list-style-type: none"> •University-affiliated research (5) •No specific source (4) •Radio (1) •Farming publications (1) 	<ul style="list-style-type: none"> •National Public Radio (3) •Scientific Journals (2) •Farming publications (2) •Does not access information (1) •Family and friends (1) •Popular news channel (1) •Multiple sources (1)

• 3 farmers said that National Public Radio (NPR) was their top source and 2 mentioned NPR as a supplementary source.

• Farmers commonly preferred university sponsored research as their desired source for information; however, no farmer stated it as their current top source.

• 5 farmers voluntarily stated that they value scientific research.

3. HOW CLIMATE INFORMATION INFLUENCES FARMING PRACTICES

"I like the fact that we sell very locally ... however, I feel like that's driven more by economics than by our belief that climate change is a threat."



•5 farmers were conscious of their fossil fuel usage and some mentioned that being "local" cut down on their fuel consumption. Some farmers mentioned this being driven mainly by economics while having peripheral environmental advantages (e.g., above quote).

•The majority of farmers would consider marketing climate-friendly products (Figure 3).

•8 farmers said that information on climate change influences their farm management practices. One mentioned that hotter temperatures due to climate change has allowed her to grow "Cut Short Greasy Back" beans (left) which are normally grown in the South.

Figure 3



Discussion

• Farmers stated that climate is affected by agriculture and vice versa, one even noting the ability to plant a new crop because of climate change. These results demonstrate that farmers are aware of climate change and through open dialogue there is an abundance of information that scientists can learn from farmer experiences.

• While farmers stated that they would like to obtain their information on climate change and agriculture from universities, no farmer stated university research as their top source. This suggests that information made available to farmers by universities on this topic might be lacking.

• Research and outreach should focus on economic as well as environmental benefits to reducing climate impacts. Potential exists for a "climate friendly" marketing strategy.

• While the sample size was small, this data does provide insight into how farmers view climate change, where they obtain information, and how this info might affect their farming operations.

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Literature cited

1. United States. Department of Agriculture. National Agricultural Statistics Service. *Data Sets*. United States Department of Agriculture, 22 July 2011. Web. 25 July 2011.
2. Doll, Julie E., and Marci Baranski. *Greenhouse Gases and Field Crop Agriculture*. Rep. Michigan State University Extension, 2011. Print. Climate Change and Agriculture Fact Sheet Ser. E3149.
3. United States. Department of Agriculture. National Agricultural Statistics Service. *Michigan Agricultural Statistics 2009-2010*. United States Department of Agriculture, Sept. 2010. Web. July 2011.