

What is Climate Smart Agriculture and How Does it Impact Fruit and Vegetable Growers?

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Climate Change

There is increasing discussion about climate change and its potential impacts. Please select one statement that best reflects your beliefs about climate change

Climate change is not occurring.

There is not sufficient evidence to know with certainty whether climate change is occurring or not.

Climate change is occurring and it is caused mostly by natural changes in the environment.

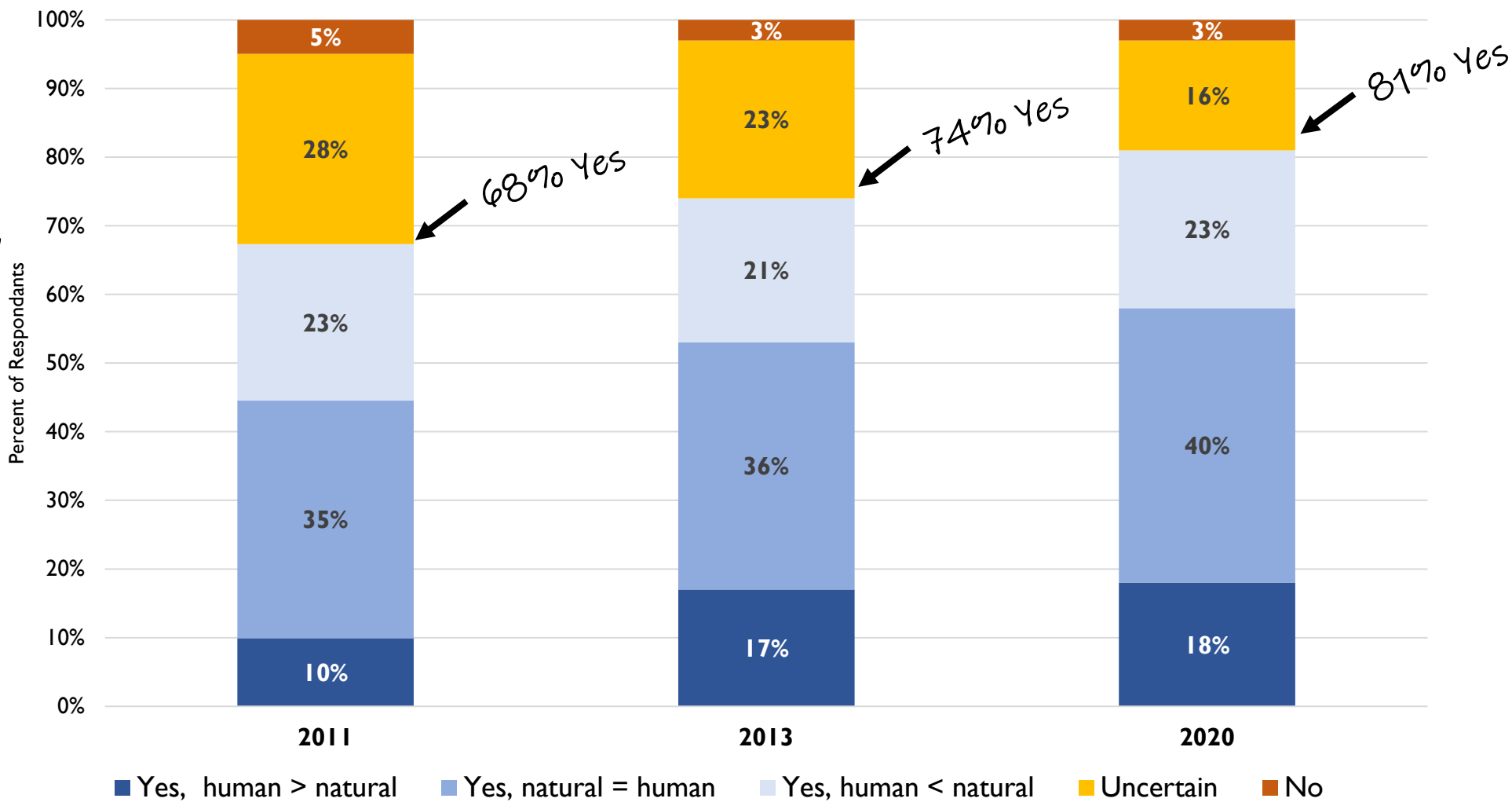
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Climate Change

Iowa Farmers' Climate Change Beliefs

In 2021, 67% of Iowa adults agreed with the statement, "Global warming is happening."

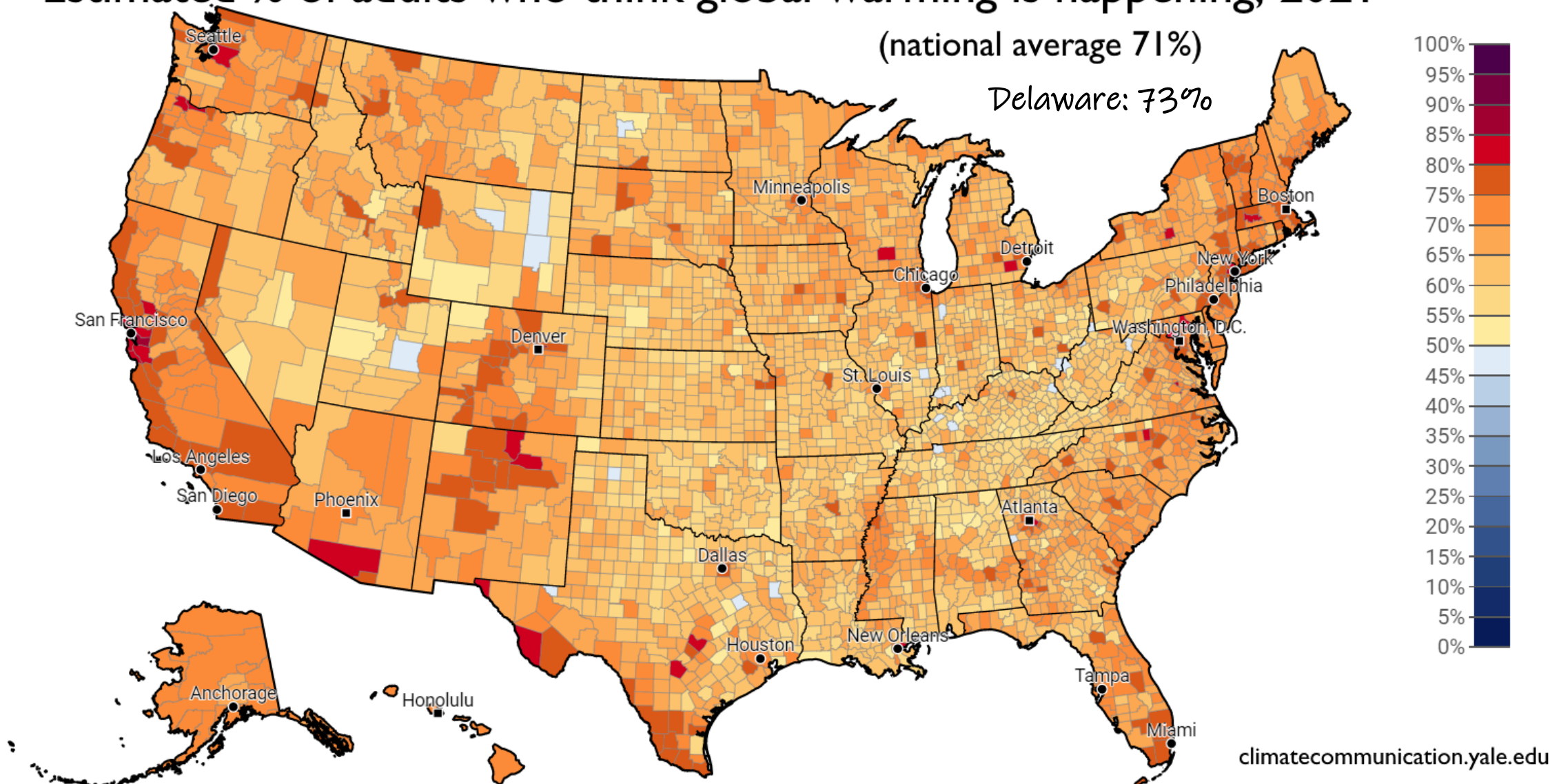


Climate Change

Estimated % of adults who think global warming is happening, 2021

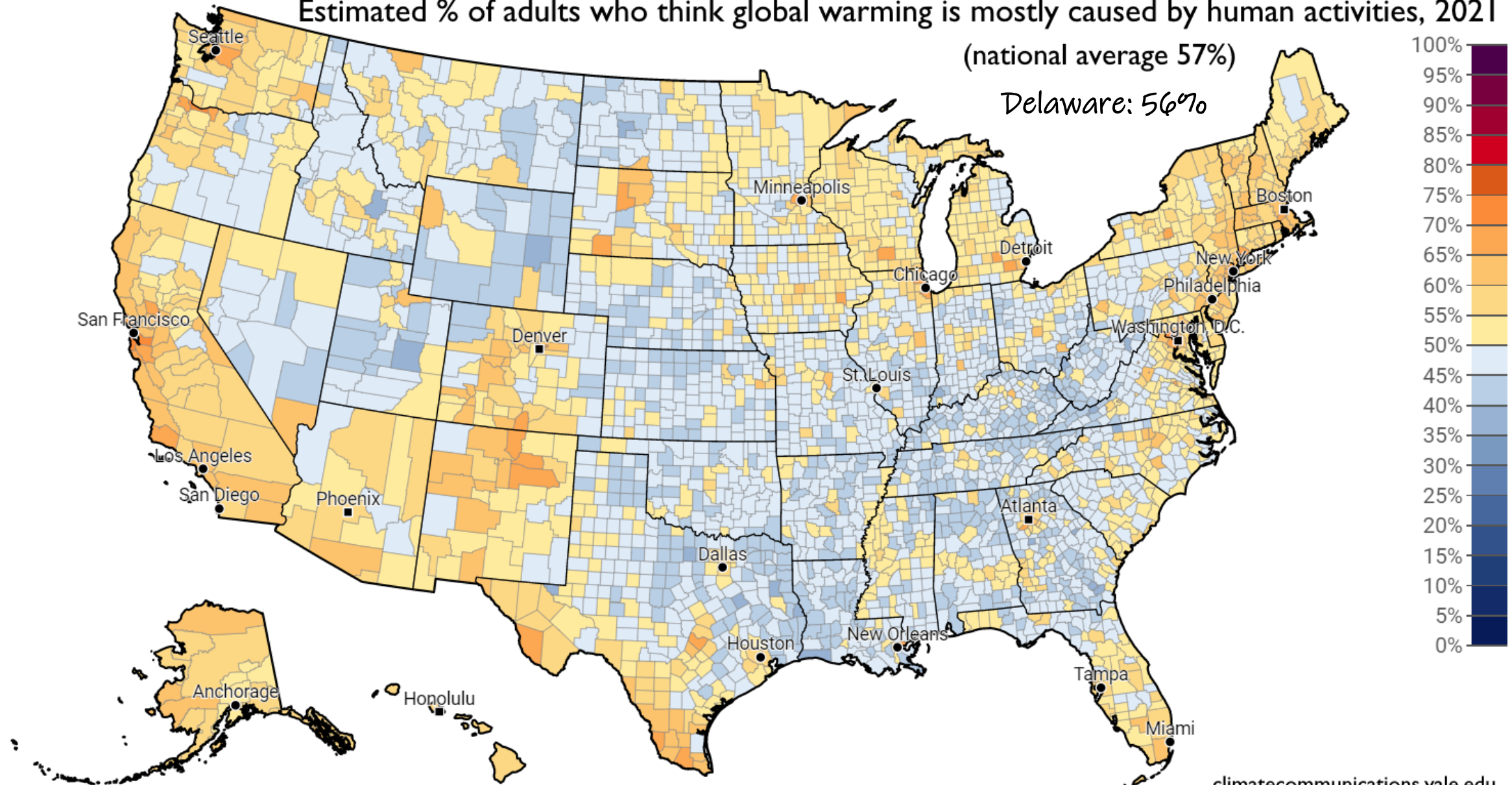
(national average 71%)

Delaware: 73%

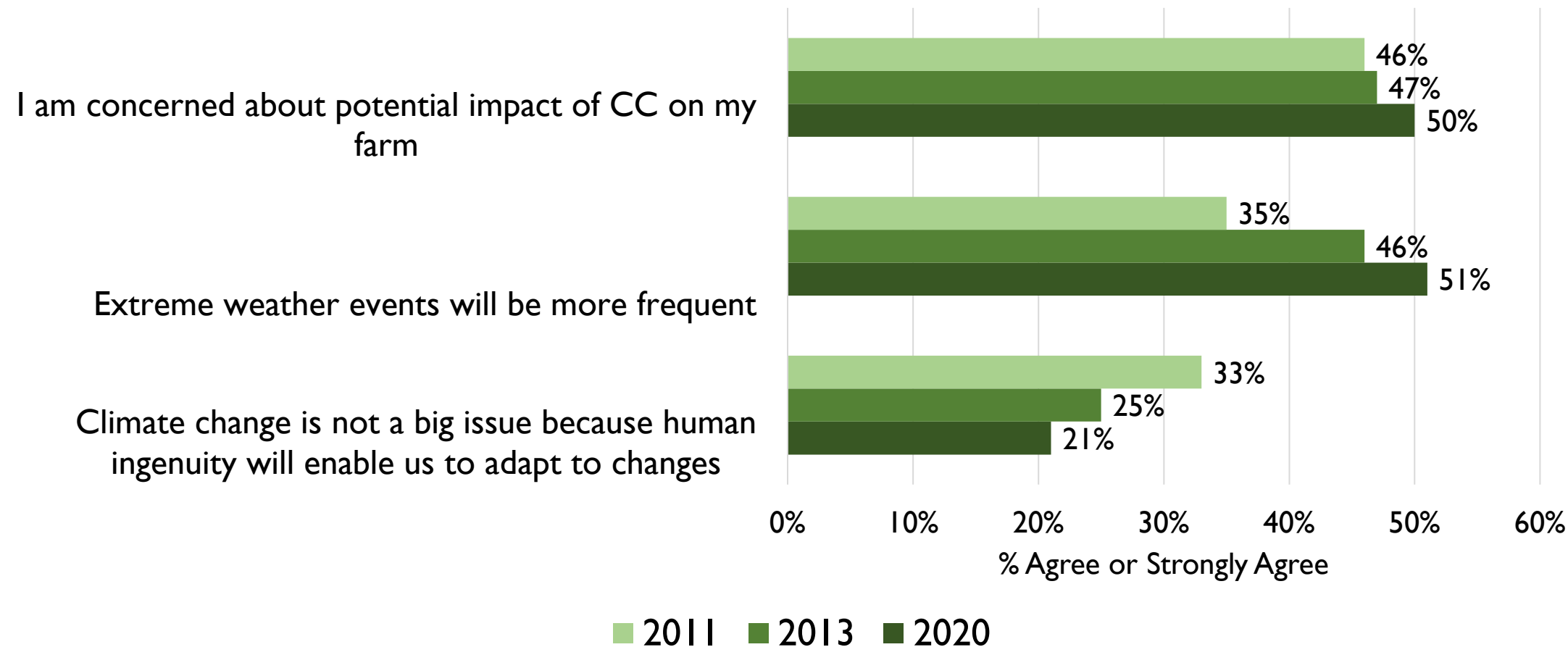


Climate Change

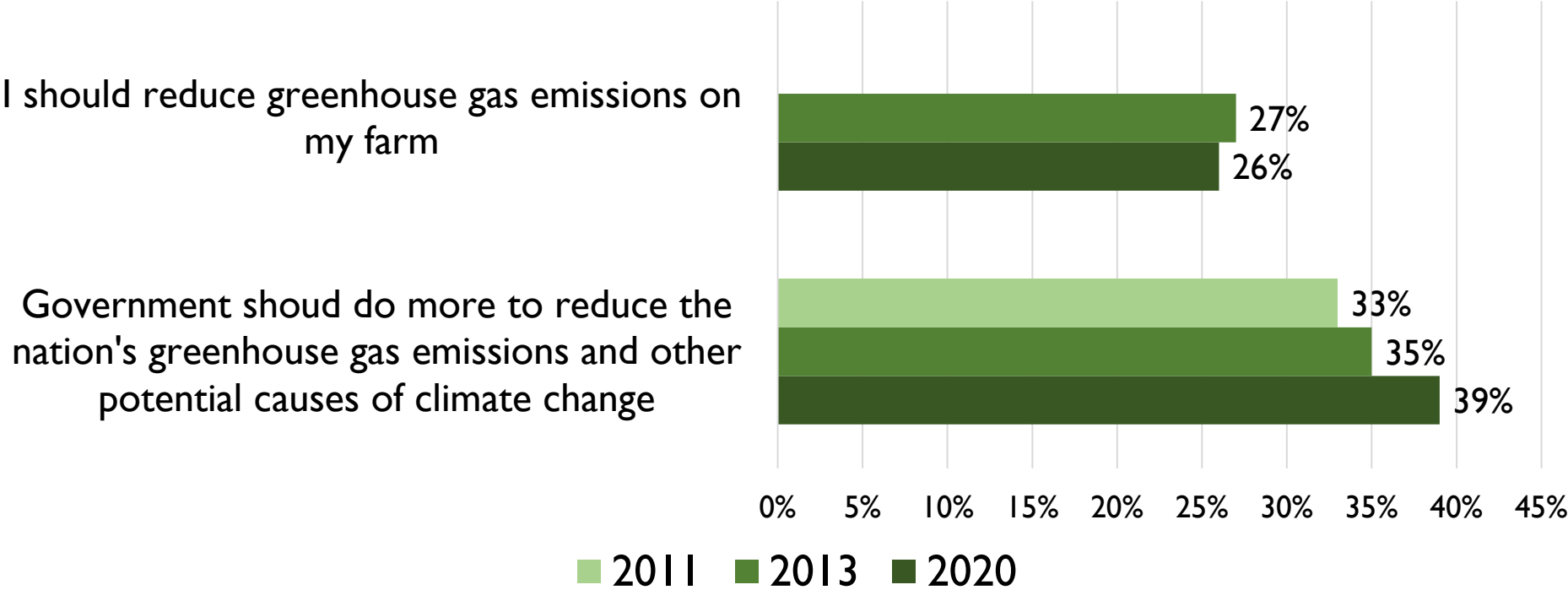
Estimated % of adults who think global warming is mostly caused by human activities, 2021
(national average 57%)
Delaware: 56%



Iowa Farmers' Agreement with Climate Risk Statements



Iowa Farmers' Agreement with Greenhouse Gas
Action Statements



Climate Change

Locally and globally, air and ocean temperatures are increasing.

Increasing temperatures have impacted long term weather patterns (climate).

Changing climate means that our past way of doing things may not be the best way for the future. → **Adaptation**

Human activity is the major contributor to climate change through release of greenhouse gasses: carbon dioxide, nitrous oxide, methane

Continued or increased greenhouse gas emissions will change the climate to a point of catastrophic impacts on human life.

People should change their activities to reduce greenhouse gas emissions. → **Mitigation**

Climate Smart Agricultural Practices

Most “climate smart” agricultural practices are things you have already heard of.

Many “climate smart” agricultural practices are things you are already doing.

Adaptation Practices

Increased Summer Temperatures

- Irrigation
- Adjust crop planting dates
- Plant heat tolerant crops
- Plant heat tolerant varieties of heat sensitive crops
- Plant different crops
- Manage new crop pests (weeds, insects, diseases)
- Increase soil organic matter (cover crops, amendments)
- Use shading

Increased Winter Temperatures

- Manage new crop pests (insects, nematodes)
- Adjust crop planting dates
- Plant different crops

Sea Level Rise

- Manage saltwater incursion impacted fields

Higher Volume Rainfall Events

- Field drainage
- No-till, minimum tillage
- Practices to reduce compaction
- Increase soil organic matter (cover crops, amendments)
- Practices to reduce soil-borne disease (biofumigation?)
- Cover crops
- High tunnel production

Mitigation Practices

Increase Carbon Sequestration

- Irrigate to maximize crop growth
- High biomass crops
- Reduced tillage
- Cover crops
- Maintain vegetative buffers

Decrease Carbon Dioxide Emissions

- Reduce tillage
- Use renewable energy

Decrease Methane Emissions

- Vegetable & fruit growers are off the hook

Decrease Nitrous Oxide Emissions

- Apply N fertilizer according to crop needs
- Time N application to crop demand
- Improve drainage to decrease duration of saturated soil conditions.
- Reduce tillage?

Mitigation practices are the practices that are likely to be supported by subsidies.

Mitigation/Adaptation Overlap

Increase Carbon Sequestration

- Irrigate to maximize crop growth
- High biomass crops
- Reduced tillage
- Cover crops
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Decrease Methane Emissions

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Irrigation
Reduced Tillage
Cover Crops
Drainage

Mitigation practices are the practices that are likely to be supported by subsidies.













Mitigation Practices with Other Benefits

Practice	Production	Quality	↓ Costs	Adapt	Sequester C	↓ CO ₂	↓ NO ₂
Irrigation							
Reduced Tillage			\$			C	
Cover Crops							
Vegetative Buffers							
Renewable Energy			\$			C	
N Management			\$				N
Drainage							N













Mitigation Practices with Other Benefits

Practice	Business Benefits			Adapt	Mitigation Benefits		
	Production	Quality	↓ Costs		Sequester C	↓ CO ₂	↓ NO ₂
Irrigation							
Reduced Tillage			\$			C	
Cover Crops							
Vegetative Buffers							
Renewable Energy			\$			C	
N Management			\$				N
Drainage							N













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Drainage							N













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N Management			\$				N
Drainage							N













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Vegetative Buffers	?	?		?			
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So Many Questions

Which practices will be subsidized?

How will subsidies work?

Will practices be mandated?

Can we reduce tillage in vegetables?

How do we maximize production benefits of practices?

How do we manage increasing disease/pest threats?

What practices minimize nitrogen loss?

What should my farm do to adapt to climate change?

Which mitigation practices fit with my farm business?

Do I really need to think about this ?

My Advice

Climate change is not occurring.

There is not sufficient evidence to know with certainty whether climate change is occurring or not.

Talk to some old people about outdoor ice skating and pole lima bean growing.

Climate change is occurring and it is caused mostly by natural changes in the environment.

Think about your farm's vulnerabilities and what you can do to adapt.

Climate change is occurring and it is caused more or less equally by natural changes in the environment and human activities.

Climate change is occurring and it is caused mostly by human activities.

Think about what mitigation strategies work with your farm business.

My Advice

Talk about climate change questions and policy with:

Extension folks and researchers
policy makers and regulators