Climate is always changing:
Climatologists as trusted information source

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The 3rd National Climate Assessment identifies the environmental, social, and economic impacts of a changing climate on the United States (nca2014.globalchange.gov)

KEY MESSAGES FOR AGRICULTURE ARE

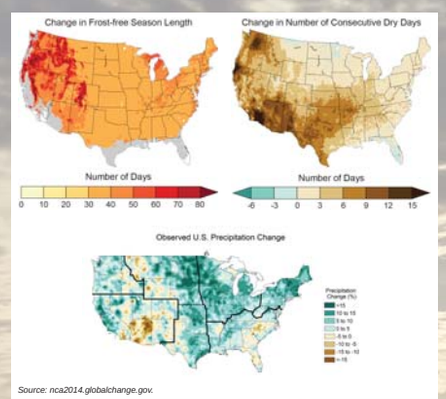
1. **Climate disruptions to agricultural production have increased in the past 40 years** and are projected to increase over the next 25 years.

2. Many agricultural regions will experience declines in crop and livestock production from **increased stress due to weeds, diseases, insect pests,** and other climate change induced stresses.

3. Current **loss and degradation of critical agricultural soil and water assets** due to increasing extremes in precipitation will continue to challenge both rainfed and irrigated agriculture unless innovative conservation methods are implemented.

4. Agriculture has been able to adapt to recent changes in climate; however, **increased innovation will be needed to ensure the rate of adaptation** of agriculture and the associated socioeconomic system can keep pace with climate change over the next 25 years.

5. Climate change effects on agriculture will have **consequences for food security**, both in the U.S. and globally, through changes in crop yields and food prices and effects on food processing, storage, transportation, and retailing.



WHAT CLIMATOLOGISTS ARE SAYING

Climatologists in the North Central Region (N=22) were interviewed and surveyed in 2011 regarding how climate science could help farmers make short and long term decisions. Here is a sampling of what they had to say:

On climate variability and changing long-term weather patterns

"Climate variability has always been on the farmer's mind. It's always been a part of life for the farmers. Climate change has not always been on the farmer's mind but now is becoming to be more so the case."

"I usually just use the word "climate" rather than "climate change" or "global warming." And the reason for that would be… while it's [climate] more stable than weather…it is a changing pattern. It's not static. So talking climate change is kind of redundant…."

"… climate is dynamic. That's one of the most important lessons I think that we can teach … it has changed in the past, it will in the future, regardless of human activity."

"One point I always try to make is that climate is always changing, always changing, whether caused by humans or not. If you took humans out of the picture, there is still going to be change in climate … people should just take that as a matter of fact—you're going to have to deal with change because things aren't going to be the same. And I think a lot of people just don't realize that. They think of nature itself as just kind of static, as kind of this museum piece that doesn't change. And yet it's always changing."

On risk management

"Many of the things that we [climatologists] can do to help people make decisions based on data, based on outlooks, based on probabilities, are noncontroversial. But they are the basics of longer-term planning—how do you make a decision or plan for … uncertainties to reduce your risks?"

"That's something that people in agriculture typically have to do—they have to manage risk. And so how to blend this together and make some sense out of the weather and climate-related part of this is a continuing challenge, especially when we talk about future projections."

"[I like to] talk about it through hazard mitigation or early warning system for extreme events. That is the kind of thing that we need to move towards in terms of alerting the public or a particular sector that big things are coming or may be coming or may be more frequent than they used to be. That actually is a way into perhaps changing not only perception but also changing decisions."

On climate education

"Likely we as public citizens are going to have to make some really challenging decisions in the future—what, if anything, to do about climate change. We have to be informed. We have to be educated about those. We can't afford to be ignorant"

"[climate] education is a long term process."

"Many people say they don't believe [in climate]…So understanding what aspects they have trouble understanding or believing is an important part. Understanding those nuances is really important and people like state climatologists can do that."

"We've made more and more effort in extension and with other groups to educate people and to show them the data and to show them the consequence of these changes. There's a twofold or two-pronged educational effort here. The first prong or the first path is to simply take the data and the history for a location and show how we are now measuring climate attributes that are outside the bounds of what we have measured historically. And we've got scads of examples of that. The second path or the second prong is to show what the consequence of that has been—how it has changed the landscape, how things are different than what they once were."

"[Climatologists can] produce some very likely scenarios that farmers could evaluate and think about how they would respond to these scenarios. We're not saying they're going to happen, but these are plausible scenarios. So I think what farmers could do to adapt is to consider conditions outside the range of very recent experience, because there's going to be a higher likelihood… We have high confidence that there will be more of these conditions outside the range of recent experience."

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