

VIDEO TRANSCRIPT FOR “CLIMATE CHANGE AND FOOD SECURITY”

On-screen text:

Climate Change and Food Security
a discussion with David Lobell

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David Lobell
Deputy Director, Center on Food Security and the Environment

Professor Lobell: “Food security” is really just a fancy word for being confident that you know where your food is coming from, that you’re not going hungry, that you’re not uncertain where your next meal is coming from. The Center on Food Security and the Environment is really concerned about how to bring the billion people or so that are food-insecure today into a state of food security, and how to do that in a way that preserves the environment as best as we can.

Climate change is one of many factors that influence food security, and there are lots of different ways that it could influence it. The most obvious one is that agriculture everywhere still depends on the weather. As the weather shifts with climate change—and agriculture struggles to keep up with those changes—there’s certainly a potential for shortfalls in production, which could lead to increases in prices and difficulty in getting access to food.

In the work we’ve done in terms of climate effects on agriculture, one of the surprising things has been that the data pretty clearly show very strong temperature effects on crops. Often people think of rainfall as being really important in agriculture. That’s what I thought. It’s not unimportant, but what the data clearly show is that a lot of the reasons you see good production in cooler, wetter conditions is as much for the “cooler” part as for the “wetter” part. What that means is that—going forward, as the temperatures continue to warm and are likely to warm—in many cases, these [temperature] effects will really dominate the overall picture of what’s happening to agriculture, even if you had the same amount of rainfall, even if you had more rainfall. That’s not something that was fully appreciated by me or other people before.

What we really want to understand is: Are different policies or different technologies going to help or hurt, in terms of food security?

With climate change, we have a pretty good understanding now that additional climate change on top of what we already are committed to (because of all of the emissions of greenhouse gases that we’ve had)...we’re pretty confident that additional emissions on top of that would really not be a good thing for food security. Being able to say how much of a bad thing is harder.

We’re at a state where we understand pretty well the basic drivers of how food security is affected by climate change and the basic scenarios that may come to pass. A lot of [the scenarios] are based on the fact that most of the food-insecure are already in pretty hot areas, and as those areas get hotter and potentially drier, then there’s a challenge that these systems face.

The U.S. and the world are actually similar, in the sense that the crops that are most vulnerable in the U.S. are probably corn and wheat, and that’s a similar story throughout the world. In a lot of the world, the main crops are corn, wheat, rice, and soybean and different mixes of those. Those are the main sources of calories and protein around the world.

Rice and soybean have more of a tropical origin; they’re more suited to higher temperatures. So, generally speaking, what we see in the data is that those are less impacted than crops like

corn and wheat, which are often used to cooler temperatures or are already growing in fairly marginal conditions. They [corn and wheat] get hurt that much more.

I think the biggest gray area right now, or one we're really focused on, is looking at this question of "What can you do to adapt?" There are a lot of ideas out there about how you might change the crops, or how you might change the way we grow the crops, and how those might help reduce the impacts of climate change. But to really understand that, you have to understand a couple of things: (1) More specifically, what is happening in the crop itself as weather changes? (2) What are the genetic possibilities out there? What are the different shapes, sizes, colors, and all the different aspects of the different plants that might help? That's an area that people have been working on, but there's a lot more work that needs to be done.