

C-FARE Newsletter July 2021

Market Corner

Agriculture is one sector in the economy that is considered to be most vulnerable to climate change because it relies heavily on favorable weather conditions to achieve good crop yield outcomes. Moreover, a large and growing literature has documented that climate change has strong negative impacts on mean yields and yield risk (or yield variability).



To better manage yield variability, especially downside yield swings due to extreme weather, governments worldwide have increasingly supported crop insurance as one of the main risk management tools for agricultural households. In the US, for example, crop insurance is now considered the centerpiece risk management program in agriculture. However, the widespread use of crop insurance likely influences farm management behavior (i.e., incentives for climate change adaptation). These changes in behavior consequently affect eventual yield outcomes (i.e., mean yields and yield risk).

Hence, I was part of a recent study that examined whether crop insurance participation further exacerbates the yield-risk-increasing effect of climate change. In particular, we explored if higher crop insurance participation results in larger increases in the yield risk response to extreme heat. We found that the yield risk-increasing effect of warming is further magnified under high levels of crop insurance participation.

For example, our estimates suggest that a 1°C rise in daily minimum and maximum temperatures increases the variation in corn yields (e.g., the standard deviation) by 6.2 bu/ac when a county only has 10% crop insurance participation. On the other hand, if crop insurance participation in the county is at 80%, a 1°C rise in daily minimum and maximum temperatures increases the variation in corn yields by 8.6 bu/ac.

These results support the notion that crop insurance can serve as a disincentive for climate change adaptation in agriculture and may be an “unintended consequence” of subsidizing crop insurance and encouraging higher participation levels.

Hence, subsidy-based conservation programs in agriculture that encourage the adoption of climate change adaptation practices may have an important public policy role in counteracting this crop insurance disincentive effect. In addition, starting policy conversations on how to potentially refine crop insurance rules and guidelines to mitigate the adaptation disincentive is likely merited.

For further consideration of the topic discussed above, stay tuned for the release of this study in the European Review of Agricultural Economics. Feel free to reach out to me (rmrejesu@ncsu.edu) for more information.

Please share this newsletter with others — and to add your email, simply reply to this email. We want to hear from you!

Roderick M. Rejesus, NC State University

Director Spotlight

Kim Morgan (KIMorgan@ufl.edu) is an Extension Economist and Associate Professor at the University of Florida's SW FL Research and Education Center in Immokalee, FL.

She serves as the Coordinator of the UF/IFAS Farm Labor Supervisor Program. (On Facebook @FLSTraining15)

Why UF? As a 3x Gator grad myself, with 3 siblings who also hold UF degrees, I have achieved my lifelong dream of “Coming Home” to work alongside farmers and ranchers surrounded by the resources and communities unique to the state of Florida.



Why Economics: We collaborate across agencies to identify risk factors that are driving observed increases in stressors and share proposals to help growers improve resiliency in the face of changing climate and market conditions. I believe economists add value to the state of science by providing realistic choices adaptable by ag sector participants that support long-term viability.

My Motivation: “Problems are just opportunities in work clothes.” To me, the pursuit of solutions to questions motivated by real-time field conditions as part of team of scientists allows me to use my training to make a difference to the people who work 24/7/365 to grow safe, healthy, and delicious food for the world.

New Directions

Climate Change and Agricultural Risk Management Into the 21st Century. Programs that help farmers manage risk are a major component of the Federal Government’s support to rural America. Changes to this risk—and thus to the Government’s fiscal exposure—are expected as weather averages and extremes change over the coming decades. This study uses a combination of statistical and economic modeling techniques to explore the mechanisms by which climate change could affect the cost of the Federal Crop Insurance Program (FCIP). [The Full Study is Available Here:](#)

Spending of Economic Stimulus Payments and Changes in Food Purchasing During the COVID-19 Pandemic. This article sheds light on more subtle changes in household purchasing behaviors in response to COVID-19 and the ways in which U.S. households utilized their EIP. We also investigate changes in spending patterns among food-retail formats, how the pandemic changed the different types of foods households purchased. [The Full Study is Available Here:](#)

Climate Change, Water Scarcity, and Adaptation in the U.S. Fieldcrop Sector. This study focuses on cropping allocations and shifts in irrigated and dryland crop areas as two potential responses to climate change in U.S. fieldcrop production. The effects of climate change on food production, farmer livelihoods, and consumer welfare will depend on the direction, magnitude, and rate of change in local weather conditions, as well as on the ability of the agricultural sector to adapt to changing yield and productivity patterns. [The Full Study is Available Here:](#)