

The Future of Fresh Produce: Co-creating a Sustainable Supply Chain in Florida

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With a continued focus on environmental sustainability, adaptations toward ethical industry practices, and addressing challenges around climate adaptations, [Florida International University \(FIU\)](#) and [Stronger Together US \(S2G\)](#) hosted a joint symposium to discuss the future of fresh produce supply in Florida. The purpose of the symposium was to co-develop a pathway for sustainable supply chains. The symposium engaged key stakeholders in the Florida produce industry, primarily tomato and strawberry growers, buyers, and civil society members. After the initial presentations of research findings from an 18 month study, more than 30 stakeholders participated in two focused breakout sessions and provided feedback. Their feedback will help FIU refine its final study recommendations relating to the sustainability of Florida's fresh produce supply chain.

Highlights from FIU's Fresh Produce Supply Chain Study:

- A future warmer climate will increase the frequency of warmer nights (40-60%), average night temperature (9-24%), total precipitation (50%), and frequency of precipitation (60%).
- The warmer climate will reduce the yields of heat-sensitive tomatoes by 7-12% and strawberries by 9-21%.
- Tomato yields will decrease in the early harvesting season due to heat stress. However, in the winter months, yields will increase due to a reduction in freeze events.
- If climate change simultaneously occurs in all tomato growing regions of the world, the market price will increase and offset the revenue impacts of the yield loss. If extreme climate events (e.g., heat stress or high precipitation) only impact Florida production, the market prices may not react to Florida yield losses. This might result in net revenue losses for Florida tomato growers.
- Some larger tomato growers in Florida have already developed heat-resistant varieties. In order for fresh produce supply chains to remain resilient, multi-level adaptation strategies will be necessary.
- Growers will need access to more heat- and pest-resistant varieties and affordable protected agriculture technology. Furthermore, government subsidies for technology adoption, cost-effective product certification, and consumer awareness about ethically responsible and environmentally sustainable products will play a major role in making the domestic supply chain robust and resilient against future climate change.

Observations from Breakout Sessions: Climate Change and Supply Chain Resilience & Responsible Recruitment

We asked stakeholders to express their opinions about a number of issues relating to how Florida growers are adapting to conditions such as: changing climate and extreme weather events, market fluctuations, trade pressures, evolution of technology, and consumer interest in sustainable and ethical production. We summarize below the common observations and ideas of stakeholders from both sessions:

- Florida growers and crop breeders are already beginning to develop heat resistant varieties to cope with climate shocks. However, not all growers are going to be equally equipped to adapt, and therefore, some may suffer crop losses.
- There is a need for fast release of new varieties to adapt to climate change. Conventional breeding can take up to 10 years.
- Growers in Florida have been experiencing climate shocks for some time and many who experienced shocks have already left the industry.
- Strawberry growers have been experiencing elevated night temperatures and resultant yield losses. The industry is moving towards protected agriculture and late planting to avoid heat stress.
- Restructuring of tomato production has been occurring for some time. The number of growers has declined while the average farm size has doubled over the years. Some farmers have diversified their production to multiple states and countries. Large growers are becoming more and more vertically integrated in order to reduce costs, pulverize risks and ensure steady supply.
- Imports are putting pressure on Florida tomato production.
- Florida and California growers have developed cold supply chain technology that allows production in one region and shipment to markets thousands of miles away. The same technology is now being adopted by other countries.
- Florida farmers will continue to face the competition from growers in Mexico, Canada, and other U.S. states who are moving towards protected agriculture. Florida growers must adapt their open field conditions against climate shocks, or they will suffer severe losses.
- There is a need for incentivizing growers and helping them invest in technologies so that they can adapt to climate change.
- Growers are increasingly moving towards contract pricing with buyers, whereby they get more stable prices than from selling to brokers.
- Growers must learn to be more agile in terms of leveraging different market segments, e.g., contract pricing, direct sales to retailers and consumers, etc. This might need versatility in packaging and distribution mechanisms. Also, growers might want to look for diverse buyers and market channels, including direct marketing.
- Despite challenges, Florida field-grown tomatoes have favorable market reputation: seasonality (winter supply to Northern states), locally grown, better taste, and the sense of a product coming from real agriculture. Greenhouse production is expensive for most

growers; cooling greenhouses in South Florida is difficult and expensive. Structural damage from hurricanes can be expensive as well.

- Surveys conducted by retailers show that consumers are very interested in ethically sourced and ecologically grown food. Retailers have audit systems in place to source sustainable and ethically responsible products. However, such products do cost more and not all consumers are able or willing to pay for the increased price.
- Consumer behavior indicates that price and quality remain the primary drivers of purchasing practices.
- Growers are competing with other industries for agricultural labor. Some growers offer benefit programs (e.g., health care, education, daycare, housing, etc.) to attract workers. These companies tend to have better labor retention rates.
- U.S. consumers are beginning to accept greenhouse-grown Mexican tomatoes, primarily due to a domestic shortage.
- There is no comprehensive certification system that covers all aspects of fresh produce production. Most certification systems cover a single issue. It is hard to determine if certification can change consumer behavior.

We hope to stay engaged with stakeholders as we continue to refine our fresh produce supply chain study (FIU) and responsible recruitment initiative (S2G). If you have any further comments or suggestions, please contact Mahadev Bhat (FIU) at bhatm@fiu.edu or Veronica Ospina at usainfo@stronger2gether.org.

About Florida International University

Designated as a top-tier research institution, FIU is dedicated to enriching the lives of the local and global community. The Agroecology Program is one of many that enhance the university's ability to set new standards through research initiatives. We are among the ten largest universities in the nation and have graduated more than 200,000 alumni, 115,000 of whom live and work in South Florida. The current project is exploring the Florida tomato and strawberry industries with a goal of promoting more environmentally sustainable and socially responsible production and supply. For more details on the project: <https://case.fiu.edu/earth-environment/agroecology/supply-chains-study/index.html>.

About Stronger Together US

A multi-stakeholder collaborative program seeks to motivate the US fresh produce sector to recognize and reward responsible recruitment, thereby boosting the supply of ethically sourced labor and reducing risks for workers and businesses across the labor supply chain.

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