



ECONOMIC IMPACT OF HURRICANES ON FLORIDA AGRICULTURE

CHRISTA D. COURT
ASSOCIATE PROFESSOR
DIRECTOR, UF/IFAS ECONOMIC IMPACT ANALYSIS PROGRAM
FOOD AND RESOURCE ECONOMICS DEPARTMENT
UNIVERSITY OF FLORIDA

PREPARED FOR:
FLORIDAWCA WEBINAR:
NAVIGATING THE ATLANTIC HURRICANE SEASON: SCIENCE, STRATEGIES, AND SUCCESSES
DECEMBER 3, 2024

UF/IFAS Economic Impact Analysis Program

- Integrated research and extension program housed within the Food and Resource Economics Department
- Expertise in the areas of regional economic modeling, economic impact analysis, economic contribution studies, disaster impact analysis
- Provide technical assistance to industry groups, academic units, government agencies, and local communities.
- Conduct sponsored research projects involving detailed analyses of particular industries, regions, or situations.

Administrative Staff



Christa Court
Director



Kelsey McDaid
Res. Coord.

Research Faculty



Xiaohui Qiao
Res. Asst. Prof.

Graduate Research Assistants



Liam Corcoran
Student Assistant



Roberto Koeneke



Youmin Li

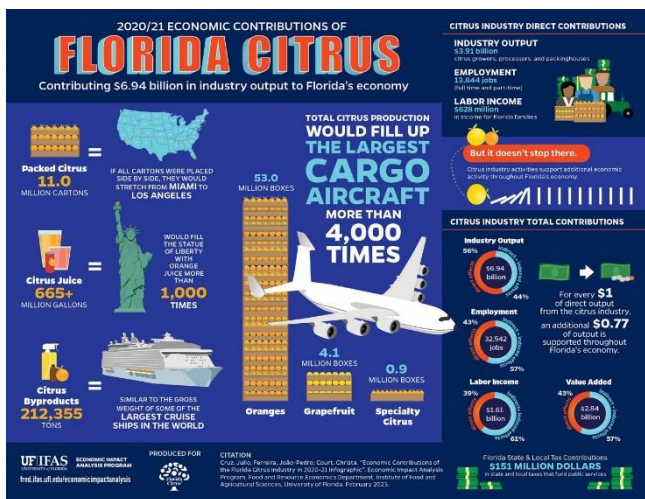


Brooke Ulrich

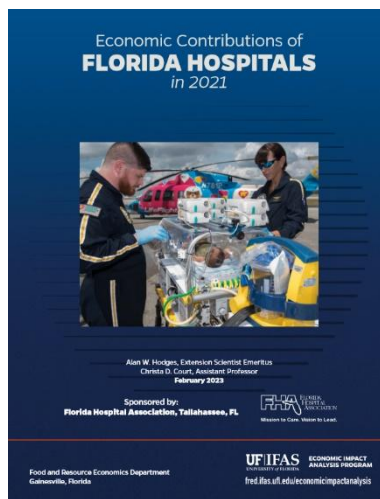
Regional Economic Analysis

<https://go.ufl.edu/eiap>

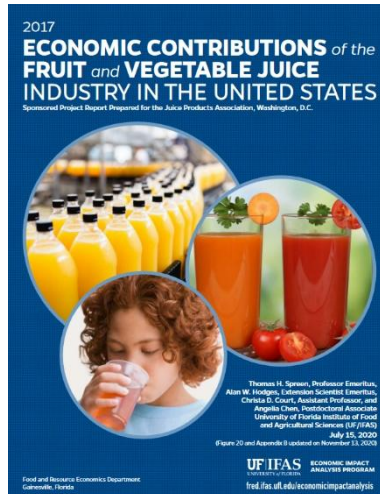
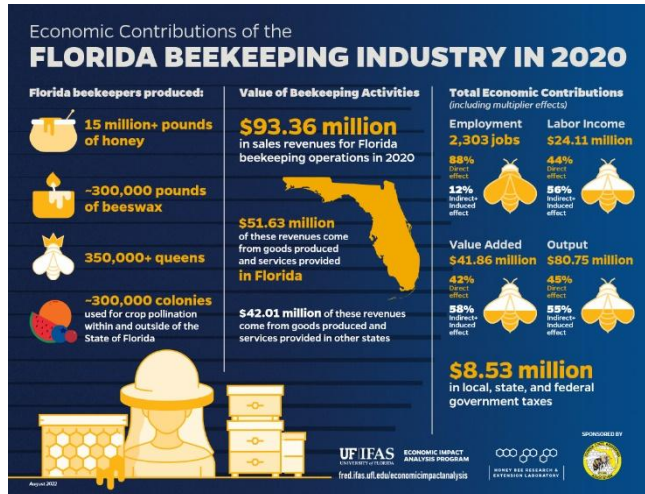
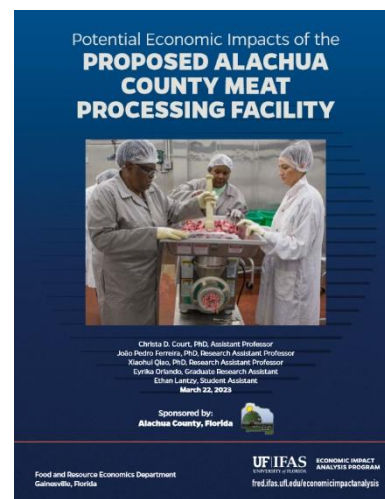
Production Agriculture



Other Industries



Local Economic Development



Disaster Impact Analysis

<https://go.ufl.edu/disasters>

Rapid Assessment of Agricultural Losses

Water Quality

Other

Preliminary Assessment of
AGRICULTURAL LOSSES AND DAMAGES
Resulting from
HURRICANE HELENE



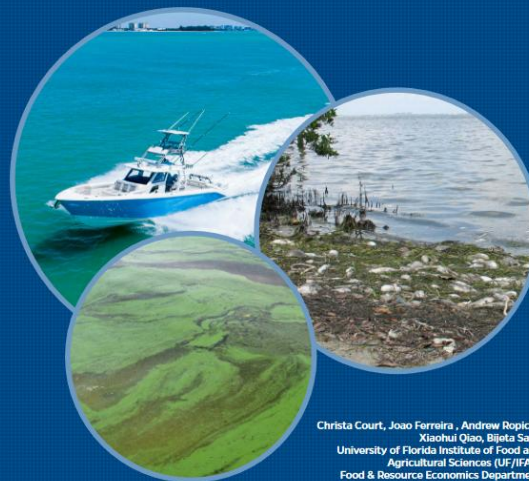
Image courtesy of NASA Worldview

Christa D. Court, Xiaohui Qiao, Roberto Koenek, Kelsey McDaid
UF/IFAS Department of Food and Resource Economics
UF/IFAS Economic Impact Analysis Program
Gainesville, Florida
fred.ifas.ufl.edu/economicimpactanalysis
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UF/IFAS
UNIVERSITY OF FLORIDA

QUANTIFYING THE SOCIO-ECONOMIC IMPACTS of HARMFUL ALGAL BLOOMS
in SOUTHWEST FLORIDA in 2018

Project Sponsored by the West Coast Inland Navigation District and The Marine Industries Association of Southwest Florida and Tampa Bay



Christa Court, Joao Ferreira, Andrew Ropicki,
Xiaohui Qiao, Binika Saha
University of Florida Institute of Food and
Agricultural Sciences (UF/IFAS)
Food & Resource Economics Department
July 2021

Food and Resource Economics Department
Gainesville, Florida

UF/IFAS ECONOMIC IMPACT
UNIVERSITY OF FLORIDA ANALYSIS PROGRAM
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2020
IMPACTS OF COVID-19 on the FLORIDA SHELLFISH AQUACULTURE INDUSTRY



Christa Court, John Lal, and Andrew Ropicki
Food and Resource Economics Department
Robert Botta
School of Natural Resources and Environment
Leslie Sturmer
UF/IFAS Shellfish Aquaculture Extension
Ed Camp
Fisheries and Aquatic Sciences
Gainesville, Florida
August 27, 2020
Food and Resource Economics Department
Gainesville, Florida

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Economic Impact of Hurricanes on Florida Agriculture

Previous Work

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graph TD; A[Previous Work] --> B[Lessons Learned]; B --> C[Future Work];
```

Lessons Learned

Future Work

UF/IFAS Involvement in Disaster Response

- UF/IFAS personnel might serve in the Incident Command Post (ICP) for ESF 17, their county Emergency Operations Centers (EOCs), or shelters.
- Where possible, UF/IFAS works with partners to coordinate access to water, ready-to-eat perishable meals, ice, feed, fuel, and hay immediately following the storm
- Coordination amongst county-, regional-, and state-level extension faculty to communicate with partner agencies and organizations



Photo Source: UF/IFAS

UF/IFAS Involvement in Disaster Assessment

- Attend producer meetings to hear first-hand about needs and impacts
- Some extension agents and faculty in impacted areas visit farms and other sites to assess damages
- UF/IFAS Economic Impact Analysis Program completes a preliminary and final assessment of agricultural losses and damages to production agriculture



Photo Source: Lisa House and Christa Court



Photo Source: Screenshots from The Florida Channel and Fox Weather

Previously Analyzed Tropical Cyclones



Hurricane Irma (2017)
Category 3

- First assessment for UF/IFAS
- Windshield surveys
- Strong assumptions on loss %

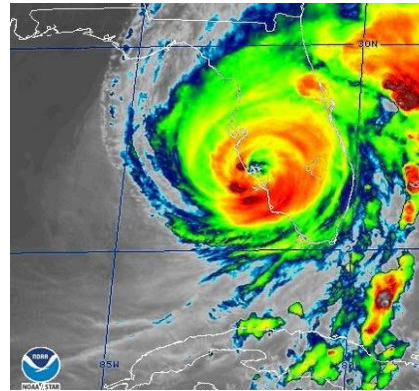
Agricultural Losses:
~\$1.313 billion



Hurricane Michael (2018)
Category 5

- Harmonized collection of data
- Struggles with power/internet

Agricultural Losses:
~\$138 million



Hurricane Ian (2022)
Category 4

- Survey improvements
- Addition of precipitation and flooding within analyses

Agricultural Losses:
~\$1.035 billion



Hurricane Idalia (2023)
Category 3

- Additional survey improvements
- Spanish translations

Agricultural Losses:
~\$276 million

Losses should not be compared across events due to changes in methodology over time.

Photo Source: NOAA

Previously Analyzed Tropical Cyclones



Hurricane Debby (2024) Category 1

- Updates to communication strategies for pre- and post-event

**Agricultural Losses:
~\$170 million**



Hurricane Helene (2024) Category 4

- Adjustments for Hurricane Debby

**Agricultural Losses:
~\$40.3 – \$162.2 million**



Hurricane Milton (2024) Category 3

- Adjustments for Hurricanes Debby and Helene

**Agricultural Losses:
TBD**

Economic Impact of Hurricanes on Florida Agriculture

Previous Work

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graph TD; A[Previous Work] --> B[Lessons Learned]; B --> C[Future Work];
```

Lessons Learned

Future Work

Many Types of Agricultural Assets at Risk



- Standing annual and perennial crops
- Live animals
- Forest inventory
- Nursery/greenhouse structures
- Irrigation systems
- Roads, ditches, stormwater impoundments
- Livestock and aquaculture facilities
- Farm machinery
- Farm homes and office buildings
- Packinghouses and processing facilities
- Research, extension, and teaching facilities

Important Considerations for Measuring Agricultural Impacts of Disaster Events

- **Agriculture is a seasonal activity**
 - when the event happens matters
- **Sectoral impacts can vary widely**
 - what the event impacts matters
- **Short-term impacts vs. Medium and Long-term impacts**
 - not all impacts are immediately observable
- **Direct vs. Indirect impacts**
 - Heavy reliance on operating loans and seasonal nature of expenditures for crop and livestock production matter
- **Forward and backward linkages to other food system activities**



Photo Source: UF/IFAS

Decision-makers Need This Information

- **Effective disaster response and recovery efforts require timely and commodity-specific damage and loss data for the agriculture sector.**
- **National strategies for mitigating the agricultural impacts of disasters require that we:**
 - Rethink risk management: Crop insurance; the tree assistance program; emergency assistance for livestock, honeybees, and farm-raised fish; and the emergency forest restoration program are important risk-management tools but are often insufficient and cumbersome
 - Review existing policies and recovery tools to find ways to decrease or prevent the need for one-time special allocations
 - Reduce the time it takes to allocate emergency funds when special allocations are needed.
 - Adopt strategies that counteract the potential compounding impact of disasters on sector growth and development and on national food security
- **All the above requires a comprehensive understanding of how different types of disasters impact agriculture.**
 - Current lack of comprehensive understanding and data limitations mean that we learn something new from each assessment completed.

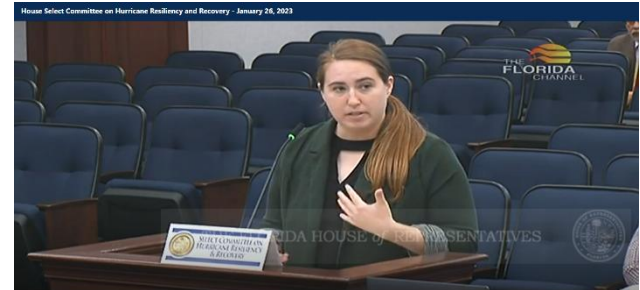
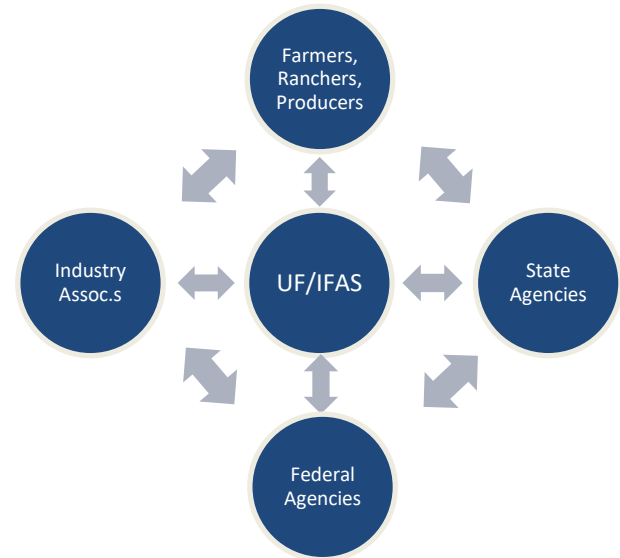


Photo Source: The Florida Channel



Economic Impact of Hurricanes on Florida Agriculture

Previous Work

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Lessons Learned

Future Work

Continued Work

- **Survey improvements**
 - Crop-specific adjustments to ensure we are accurately capturing impact types
 - Improve assessment of infrastructure-related impacts
- **Continued efforts to encourage information sharing to decrease redundancy in data collection within state and federal agencies**
- **Identifying sources of funding and data to continue to move towards “State of the Art” Agricultural Impact Tools**
 - Tip the scales on the accuracy/speed tradeoff



Photo Source: UF/IFAS and Roberto Koeneke

“State of the Art” Agriculture Impact Tools

- **Sectoral/Regional impacts → Intersectoral/Interregional impacts**
 - Size of disaster will determine the appropriate model
- **Economic impacts → Welfare changes**
 - Price changes
 - Labor market changes
 - Market share changes
- **Interdisciplinary, Integrated Modeling Efforts**
 - Innovations in data collection and integration
 - Incorporate data and models from other disciplines
- **Do more than measure post-disaster impacts**
 - Help with disaster preparedness
 - Measure and track progress on risk and resilience



Photo Source: UF/IFAS

Key Takeaways

- **UF/IFAS and the UF/IFAS EIAP help agricultural producers prepare for, respond to, assess the impacts of, and recover from disaster events in Florida**
- **Tropical cyclone events can significantly impact production agriculture operations of all types**
 - Production losses and damages
 - Asset damages
- **Future research will:**
 - Improve speed and accuracy of agricultural assessments
 - Measure and track progress on risk and resilience

Ways to Engage

Christa D. Court

ccourt@ufl.edu

(352) 294-7675

go.ufl.edu/disasters