

CLIMATE-SMART
Agriculture
2015



Global Science Conference

March 16-18, 2015
Le Corum, Montpellier France

From climate variability to climate change: Building adaptive capacity among row crop farmers in the Southeastern USA

Brenda V. Ortiz, Clyde Fraise, Dourte Daniel, Wendy-Lin Bartels, David Zierden, Pam Knox, Mark Risse, George Vellidis, Scott Templeton, Michael Thomas

Auburn University, University of Florida (PI), Florida State University, University of Georgia, Clemson University, Florida A&M



<http://www.agroclimate.org/seclimate/>

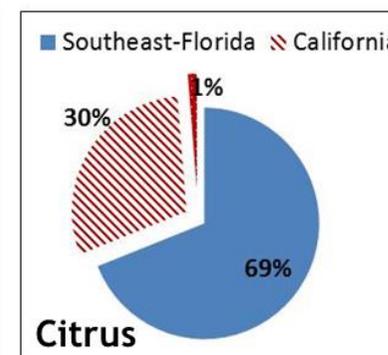
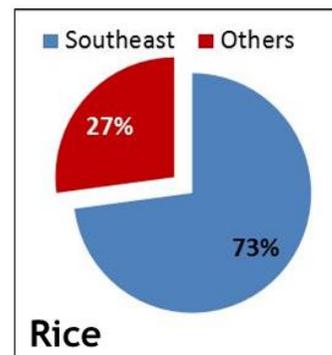
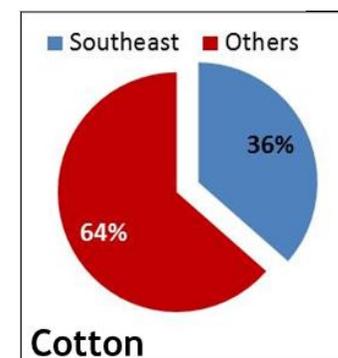
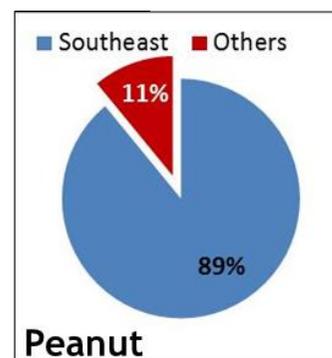


<http://www.seclimate.org/>

Southeast agriculture and climate-related risks

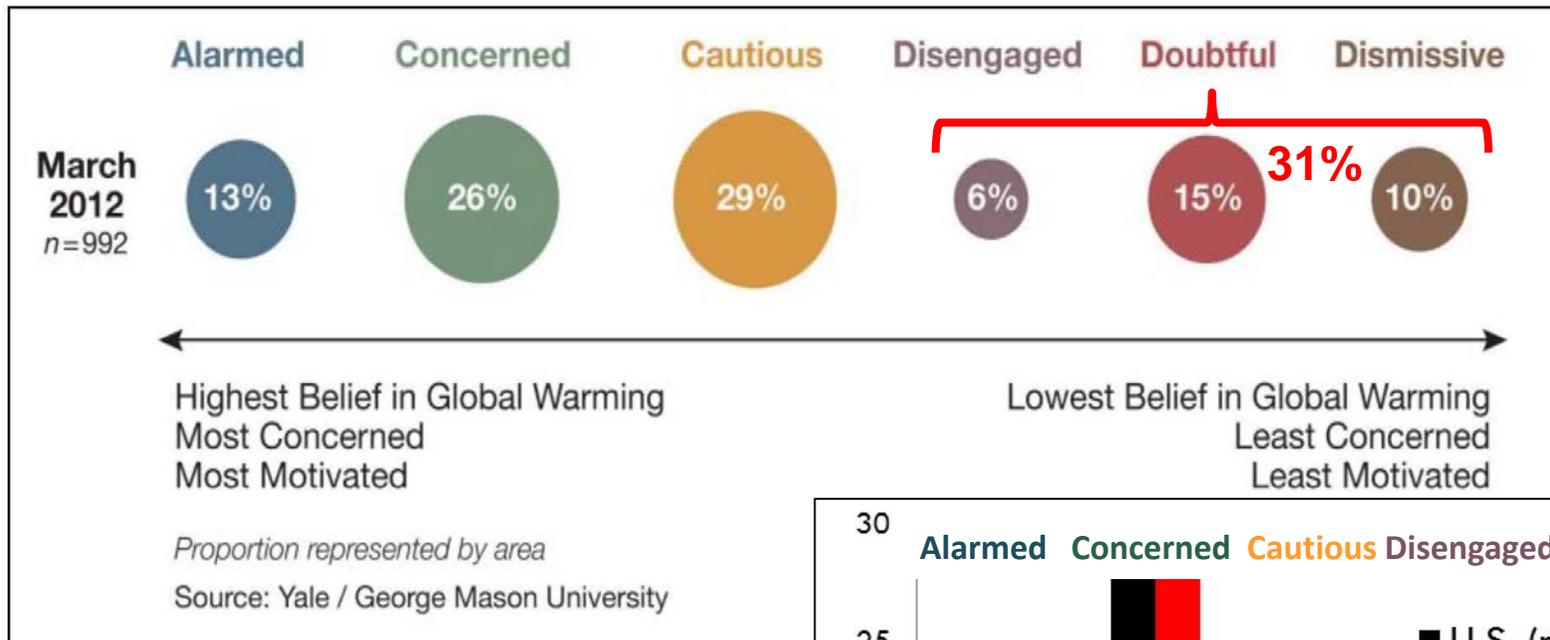
- Leading producer of food and fiber crops → \$55 billion in agricultural products annually (17% total annual USA production)
- On sandy to loamy sandy soils, most crops are planted in Spring-Summer and harvested in Summer-Fall
- Summer precipitation one of the highest and with the highest variability
- Climate influenced by El Niño Southern Oscillation (ENSO)

These commodities and others (corn, soybean) are vulnerable to climate variability and the projected *climate changes expressed as prolonged drought, extreme heat and rainfall events.*

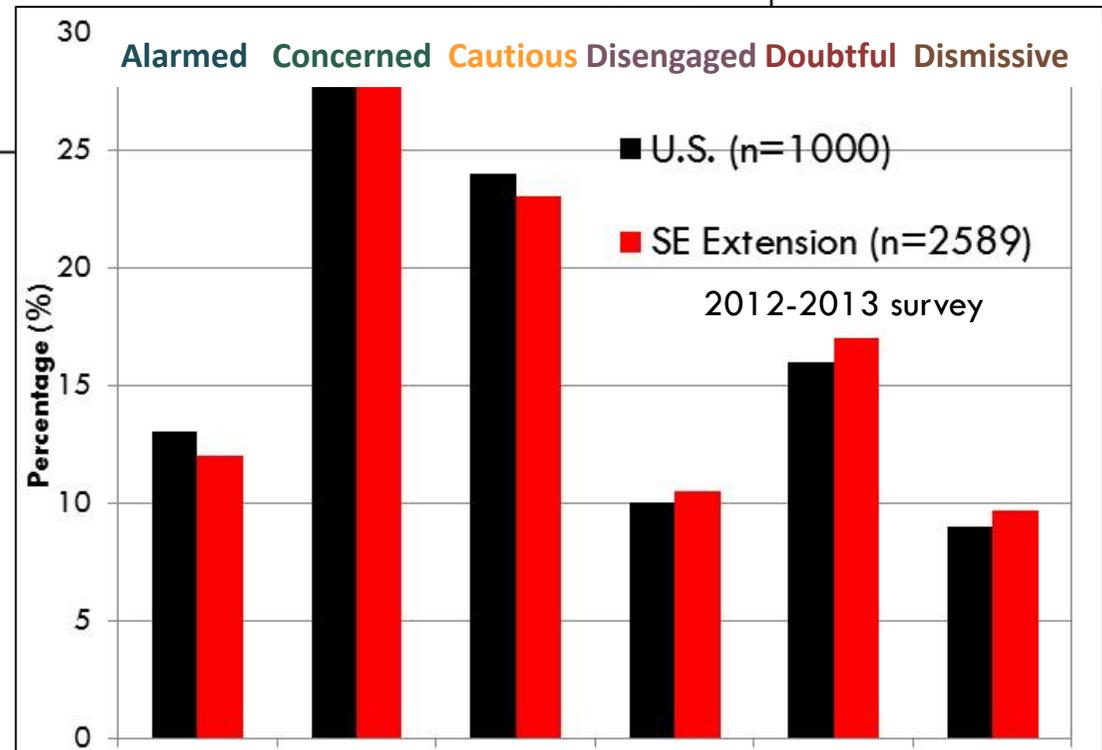


WHY from climate variability to climate change ?

Public perceptions of climate change



Southeast Extension mirrors the US public perception of climate change



Climate Variability To Climate Change: Extension Challenges & Opportunities In The Southeast USA

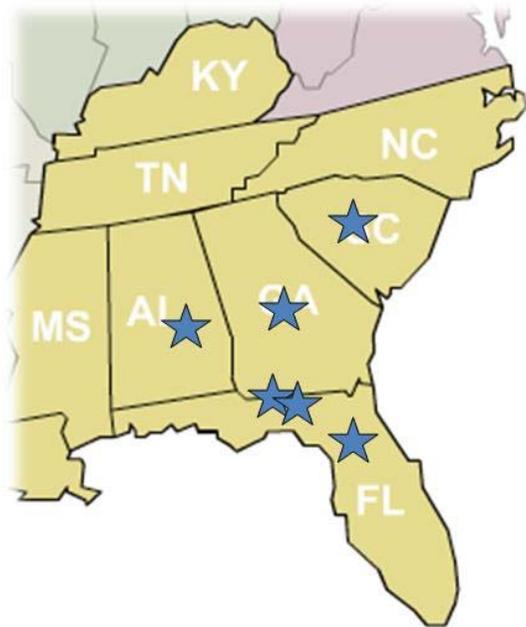


Southeast Climate

EXTENSION | Advancing Climate Extension in Agriculture

Project period : 2010-2015

Multi-state – Multi-institutions – Multi-disciplinary



Funding from :  

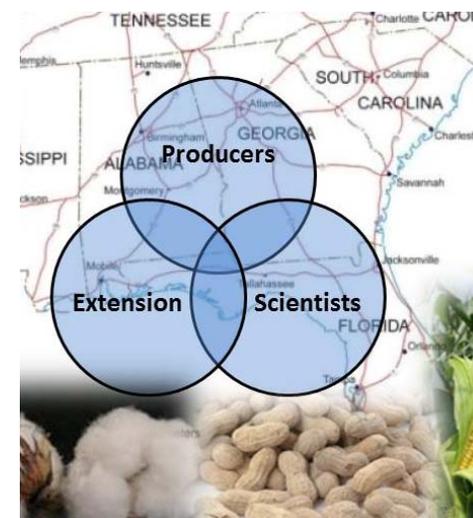
Project objectives

- Increase climate science literacy of cooperative extension faculty and stakeholders
- Integrate extension and research communities to facilitate the transfer of technologies and information about research gaps and needs of the industry
- Conduct workshops and field days to engage stakeholders and demonstrate adaptation and mitigation strategies
- Expand Web-based tools to include carbon, water, and nitrogen footprints on AgroClimate.org
- Develop and deliver producer-oriented educational products such as FAQs, publications, and Web-based materials
- Monitor and evaluate the effectiveness of our extension program

Tri-state Climate Working Group for Row Crops Agriculture

Create a space for knowledge exchange and learning to support farmers and extension professionals to cope with climate variability and changing climate

- Climate learning network engages row-crop farmers, agricultural extension specialists, and climate scientists as partners in adaptation science.
- Bi-annual meetings to exchange knowledge & experiences about how to reduce climate-related risks and increase agricultural adaptive capacity in the Southeast US.
- Strong field component (field visits) is a key element of the learning community model



Tri-state Climate Working Group for Row Crops Agriculture

How does this group works



Shared experience and participants discussing examples of how they manage risks



Included in-depth discussions help connecting new information with existing understandings

peer-to-peer learning through on-farm field visits, in-depth discussions, and experimentation



Climatologist reviews climate during previous growing season a present season forecast



Field visits - Participants report their attempts at incorporating climate information or new technologies into existing farming

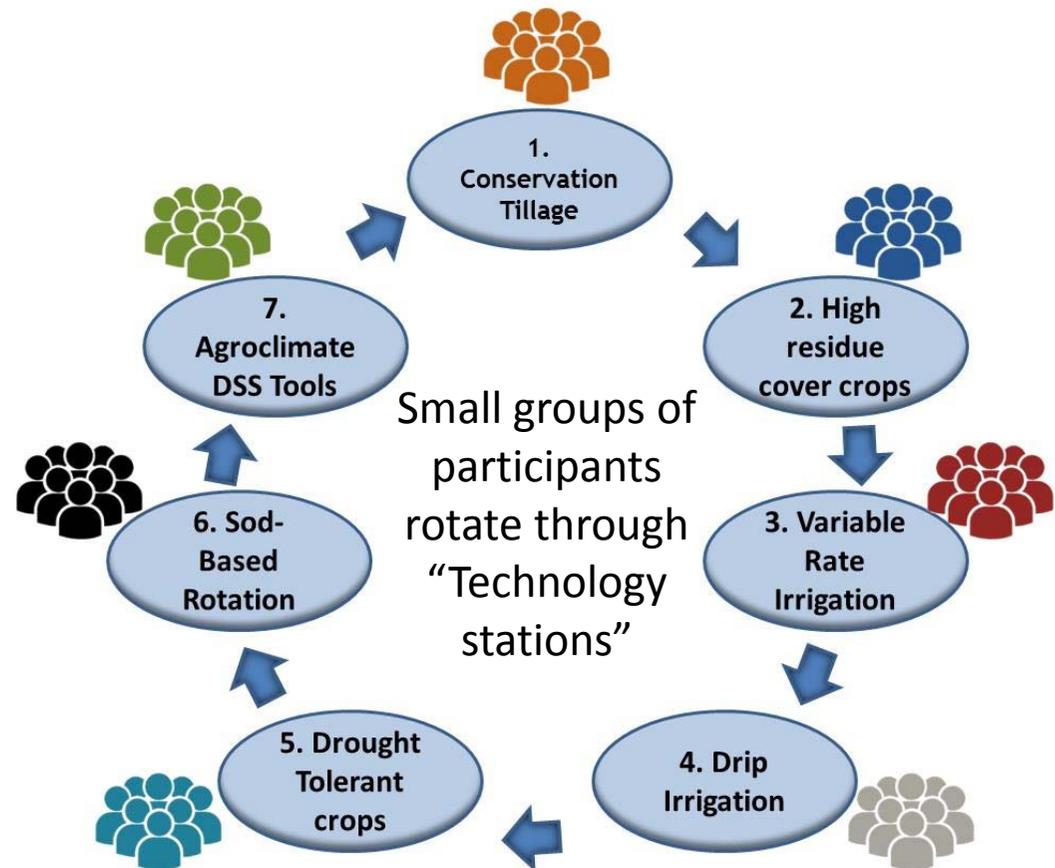
Climate Adaptation Exchange Fair

Farmers as teachers: Peer-peer learning

1. Highlight the climate-related risk benefits of selected technologies and management practices (6 to 8 stations)



Farmer Kirk Brock, describing how he manages high residue cover crops during climatic conditions influenced by La Niña or El Niño



Climate Adaptation Exchange Fair

Farmers as teachers: Peer-peer learning

2. Strengthen a network of agricultural stakeholders and continue to co-develop best bets for climate-related risks



A farmer and extension specialist at every technology station



3. Generate discussion and capture feedback from participants about barriers (and opportunities) to adopting these technologies

Adapting “Crops” to the Climate in the Southeast US



University professors with extension responsibilities have accumulated, through applied research and interaction with farmers, a lot of knowledge of production risk factors.

Inventory of major climate-related risks and management options



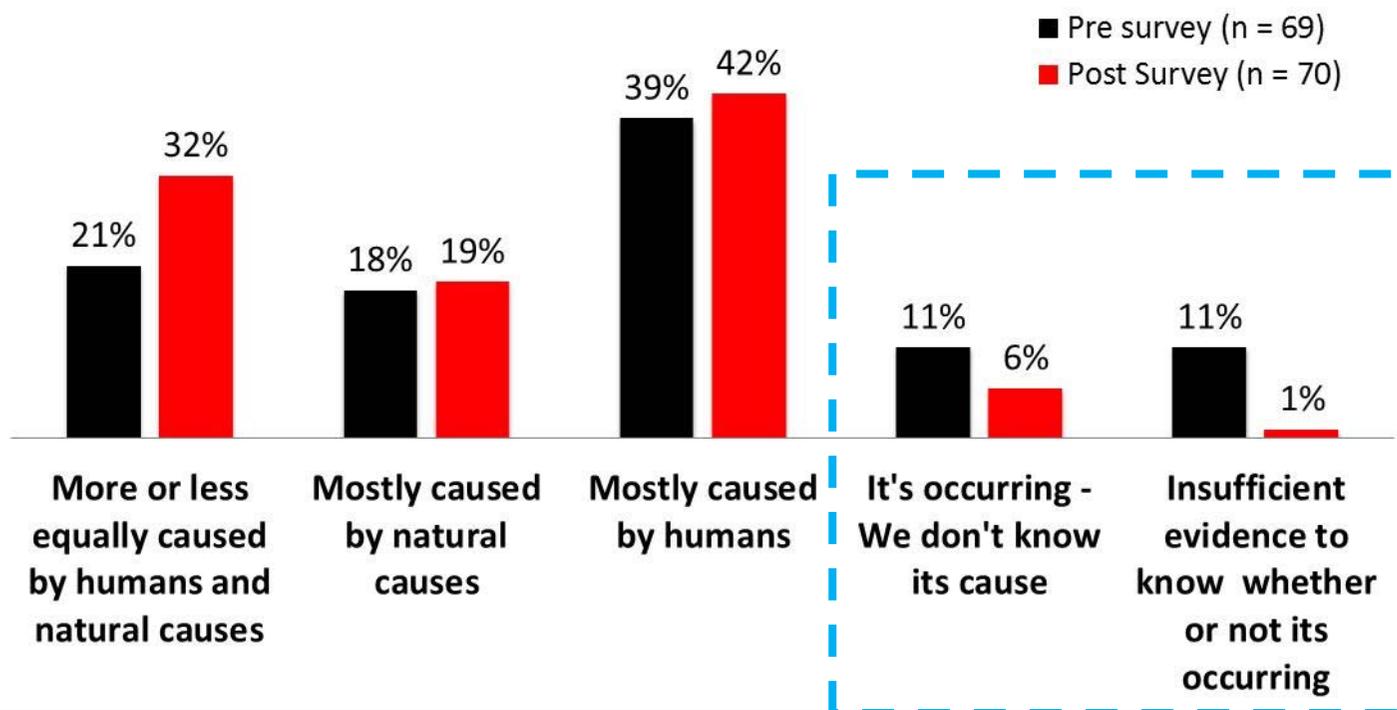
Wetter/Cooler Winter and Spring	
Impact	Strategy
Insect Pests	
More occurrences of true armyworm caterpillars and winter grain mites	Additional scouting is needed for these insect pests.
Diseases	
Increased occurrence of the soilborne wheat mosaic disease in southern areas	Follow crop rotation, use resistant varieties, and plant at the recommended time for your location
Increased occurrence of the wheat spindle streak soilborne mosaic disease	Follow crop rotation, use resistant varieties, and plant at the recommended time
Increased outbreaks of glume and leaf blotch, rust, black chaff, and take-all diseases	Follow crop rotation, use resistant varieties, plant at the recommended time, scout at jointing through head emergence, and carry out seed dressing.
Increased risk of head scab when wetter conditions occur at flowering	Perform deep tillage, use clean seed, use resistant/tolerant varieties when available, and apply fungicides based on head blight risk (http://www.wheatscab.psu.edu/).

Drier/Warmer Summer	
Impact	Strategy
Insect Pests	
More fall armyworms are likely to attack in fall.	Extra scouting is needed for armyworms.
More aphids, the vectors of barley yellow dwarf virus, are possible the following wheat season.	Extra scouting is needed for aphids.

Southeast Regional Extension Academy: Training the trainers

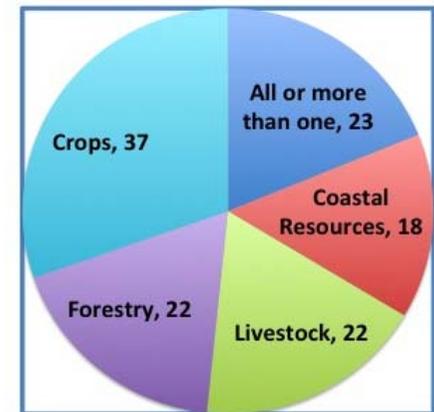
Extension Personnel's Perceptions of Climate Change Causes

Pre & Post SRECA Workshop Survey - 2014



Extension professionals from 15 states. Sep/14

Number of participants in each sector



Trainings may lead to an increase in knowledge and changes in attitude
 → 22% people were doubtful or did not have enough information, only 7% after training

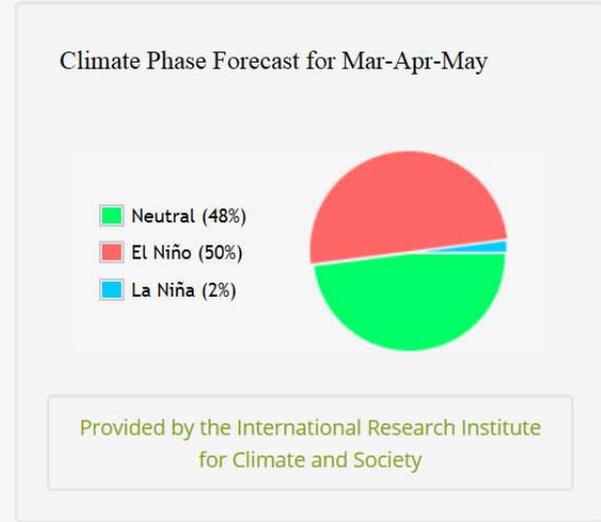
- Climate ▾
- Drought Indices ▾
- Crop Yield ▾
- Crop Disease ▾
- Degree Days and Chill hours ▾
- Footprint Calculators ▾



Water Footprint Tool

Calculate the water footprint – the consumptive water use per unit yield – for a specific season and production system.

/agroclimate.org/tools.php



<http://www.agroclimate.org/>

AgroClimate is a web-based climate information system that includes seasonal forecasts, management options for different crops/climate scenarios and tools that help producers plan for the season ahead

Acknowledgements

Funding from



United States Department of Agriculture
National Institute of Food and Agriculture

Questions?