AgroClimate for Climate-Smart Agriculture

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AgroClimate.org

- Climate extension and applied research program.
- Dedicated to translate climate and weather data into information to help producers reduce risk.

Better decisions, reduced production risk
Our Vision for AgroClimate.org

- Weather monitoring
- Short term forecast
- Seasonal outlook
- Climate change projections

Scale of climate variability

One Cropping Season
Multiple Cropping Seasons
One to several generations

Weather Monitoring & Forecast
Climate Change

Translating weather/climate information into decisions

Monitoring & Weather Forecast

- What field can I work on this afternoon?
- When can I plant my seeds?
- Should I apply N fertilizer to my fields?
- Will it be dry enough to harvest?
- Should I cut hay today?
- Cold protection tonight?
- Should I apply fungicide today?
Translating weather/climate information into decisions

Seasonal Climate Outlook

- Best crop/varietry to plant this season?
- How much should I invest in fertilizer? How to apply N?
- Should I purchase/increase crop insurance coverage?
- Marketing decisions?
- Should I invest in winter pasture or feed?

AgroClimate
Our top challenge is to translate climate change projections into decisions

**Long-term Climate Projections**

- How do I become more resilient to climate extremes?
- What cropping system will be more appropriate based on existing projections?
- Should I invest in land somewhere else?
- ?

Making *decisions based on long-term climate projections is much more difficult!*

One of the main reasons for extension faculty to be reluctant about addressing climate change issues is the lack of “practical solutions”

* Decisions at the producer level, not in terms of national or regional planning
Examples of questions that AgroClimate.org can help answer.

1. Effects of the El Niño Southern Oscillation on rainfall/temperature in your county?

2. Current strawberry disease risk? Should I apply fungicide?
**Water Footprint Tool**

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

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**AgroClimate Indicators**

**Multivariate ENSO Index – MEI**

The Multivariate ENSO Index (MEI) is used to characterize ENSO phases and strength. High positive (red) values indicate El Niño, while negative (blue) values indicate La Niña phases. (read more)

**North Atlantic Oscillation – NAO**

Strong positive (red) phases of the North Atlantic Oscillation (NAO) tend to be associated with above-average temperatures in the eastern United States while strong negative phases tend to be associated with the number of daily cold extremes during the winter. (read more)
AgroClimate tools: Climate risk - Maps

Average - Total Rainfall (Inch) - El Niño Years - January

Data source: PRISM Climate Group, Oregon State University
AgroClimate tools: Climate risk - Maps

Deviation from Average - Total Rainfall (Inch) - El Niño Years - January

Select region
Select rainfall or temperature
Select ENSO phase
- Neutral
- El Niño
- La Niña
- Compare all ENSO phases
Select month
About

*Enlarge the map on mouse roll over.

Download map
AgroClimate tools: Climate Risk - Stations

Booth Berry Farms Station
Clinch (GA)

Elevation: 46.9 m
Source: AEMN # 157
Rainfall, last update: 9/1/2014
Temp., last update: 9/1/2014
Climatology data available for 67 years

Click for Graphs/Data

C. W. Fraisse, UF-IFAS
AgroClimate tools: Climate Risk – Average rainfall – El Niño years

Total Rainfall (Inches) - Clinch County (GA)

<table>
<thead>
<tr>
<th>Average</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
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<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
<th>Year</th>
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</thead>
<tbody>
<tr>
<td>Deviation</td>
<td>5.2</td>
<td>4.8</td>
<td>4.4</td>
<td>3.1</td>
<td>3.8</td>
<td>5.0</td>
<td>5.3</td>
<td>4.8</td>
<td>4.5</td>
<td>3.7</td>
<td>3.6</td>
<td>3.6</td>
<td>51.9</td>
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</tbody>
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El Niño years

Total Rainfall

Inches

Months

AgroClimate
AgroClimate tools: Climate Risk – Deviation from long-term average – El Niño years

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- **El Niño years**

![Graph showing total rainfall deviation from all years](image)
AgroClimate tools: Climate Risk – Probability of exceedance – Rainfall La Niña years

63%
Number of days with moderate or high Botrytis risk in Plant City, FL.

Chill accumulation (hours per season), Marion County, FL.
iPhone App

- One of our most popular tools is the Strawberry Advisory System (SAS).
- Monitors infection risk for Anthracnose and Botrytis fruit rot.
- Users receive notification messages when the model detects a potential infection risk according to observed weather conditions.
C. W. Fraisse, UF-IFAS

**Plant City**

**Recommendations**

**WHEN WAS YOUR LAST FUNGICIDE APPLICATION?**
- Last seven days
- More than seven days
- None **✓**

**IS IT CURRENT PEAK OF BLOOM?**
- Yes
- No **✓**

**ARE ANTRACHNOSE SYMPTOMS PRESENT?**
- Yes
OK, Looks Great, But What About Data Poor Environments?

• How to apply these tools in a region with no station-based weather data or field trial results widely available?
AgroClimate.org as an Appropriate Technology for Mozambique

- The whole website was implemented using **WordPress**, an easy content management system.
- Whole website (except the tools) can be managed by a person with no computer programming knowledge.
- Whole website structure is in **Portuguese**.
- Works well in locations with **limited internet connection**.
- All **images** can be easily **downloaded**.
Thank you!

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Video: https://www.youtube.com/watch?v=r50mZZ9hcy8