

AgClimate: Yield Risk Decision Support System

Clyde Fraise
Agricultural & Biological Engineering
Southern Conservation Agricultural Systems
Conference
June 25-27, 2007
North Florida Research & Education Center
Quincy, Florida



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http://www.agclimate.org/Development/apps/agClimate/contrc

Map for county selection: [AL](#) | [FL](#) | [GA](#)

County/State

Current Climate Phase: **Neutral**

Home Help Contact

AgClimate Tools

- Forecasts
- Crops
- Fruits
- Forestry
- Pasture
- Livestock
- Coastal
- Climate & El Nino
- Links
- About

Welcome to **AgClimate**
A Service of the Southeast Climate Consortium



Seasonal Outlooks

- Early Summer Climate Outlook: Drought worsens (New)
- Wildfire Threat Forecast for 2007 (New)

News

- Dry weather delays Southeast crop planting, progress(5/1/07)
- Floyd drought near area record (4/22/07)
- More News

Welcome to AgClimate.org

Climate is a major factor in agricultural production and marketing. AgClimate gives the latest seasonal climate forecasts and provides tools to help producers understand and plan for climatic variation in the Southeast.

Enter your county at the top of the page to customize the information for your area. Then follow the links to the left to learn more about climate variability, El Niño and La Niña, and how they can affect agricultural production and natural resources in the Southeast.



1. Risk management tools
2. Climate forecast
3. Management options for selected crops, forestry, pasture, and livestock
4. Information about climate variability
5. Climate and weather links

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AgOutlook
Date Updated: June 1st 2007

Click here to download the PDF version of this page

U.S. Drought Monitor
May 29, 2007
click for larger version

INTENSITY

- D0 - ABNORMALLY DRY
- D1 - DROUGHT - MODERATE
- D3 DROUGHT - EXTREME

Normal convective summer rains are beginning in South Florida. This type of "hit and miss" afternoon thunderstorm will be moving northward into Central and Northern Florida and arriving in Georgia and Alabama as temperatures increase. While not a solution for all producers, these rains may mitigate drought effects in selected areas. In addition, an active tropical storm and hurricane season has been announced. While this brings a chance of crop destruction, rains associated with summer storms are important in Georgia and Alabama and are expected to contribute and alleviate the current drought situation.

TRI-STATE Region: Extreme drought (D3) has taken a toll on most crops. Crop emergence on non-irrigated land is poor, leading to poor stands. Corn planted in April and early May is most at risk. Drought during flowering and pollination delays silking, reduces silk length, and inhibits embryo development after pollination. Drought during grain-filling increases leaf dying, shortens the

http://www.drought.unl.edu/dm/DM_southeast.htm

Internet 100%



Climate and Agriculture Outlooks

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SOUTHEAST CLIMATE CONSORTIUM
AgClimate

Map for county selection: AL | FL | GA

County/State: ALACHUA, FL

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[Irrigation Tool](#)

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Risk Management Tools

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County/State: **ALACHUA**, **FL**

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Current Climate Phase: **Neutral**

AgClimate Tools

Avg and Deviation | Prob Distribution | Prob of Exceedance | Last 5 Years

Total Rainfall (in) - Average and Deviation

	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Avg.	2.6	5.7	5.4	7.3	7.5	2.4	2.5	4.8	4.5	6.3	5.3	1.7
Dev.	-0.1	-1.4	-1.6	0	1.8	-0.3	0.5	2.1	1.3	2.6	1.4	-0.5

Statistics are calculated for **ALACHUA** county.

Total Rainfall (in) - Average - ALACHUA County

State + County: **FL**, **ALACHUA**

Neutral
 El Niño
 La Niña
 All Years

Internet 100%

Alachua County
 Expected for
 Jan = 4.5"
 Feb = 6.3"
 Mar = 5.3"

Observed for
 Jan = 3.5"
 Feb = 1.8"
 Mar = 1.5"

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Current Climate Phase: **Neutral**

AgClimate Tools

Total Rainfall (in): [v]

State + County: FL, ALACHUA

Neutral
 El Niño
 La Niña
 All Years

Total Rainfall (In) - Frequency Probability - ALACHUA, FL

RAIN	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
0-1	14	2	1	0	2	27	20	4	1	1	6	47
1-2	29	8	6	0	5	31	24	12	6	5	13	22
2-3	30	16	14	3	10	20	27	17	14	10	18	14
3-4	18	19	20	8	11	12	16	21	21	14	17	10

Each column represents the frequency probabilities for the climate selected variable and month. Only probabilities between 0% and 100% are graphed.

Frequency Probability ALACHUA County

Rainfall Category	Probability (%)
0-1	1
1-2	5
2-3	10
3-4	14
4-5	16
5-6	15
6-7	15
7-8	7
8-9	7
9-10	4
More	5

Internet 100%

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Internet 100%



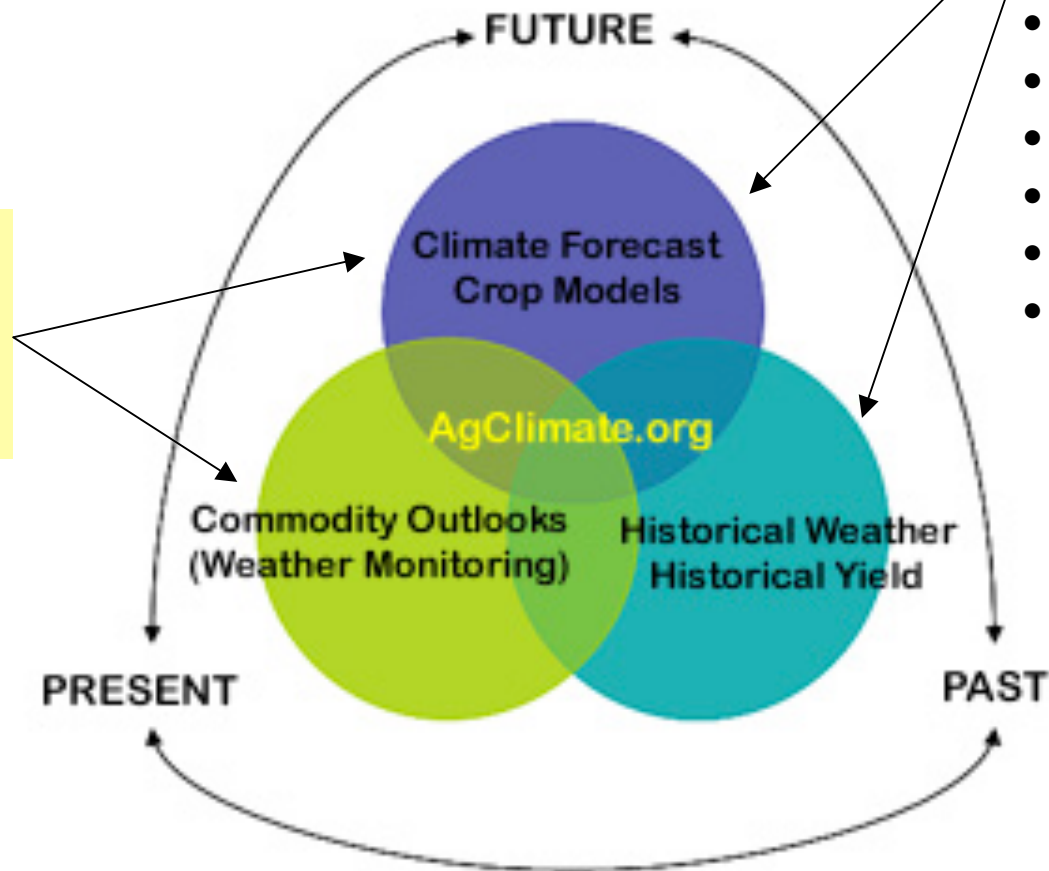
AgClimate
Tools

Yield Risk

Pre-season

- Acreage allocation
- Variety
- Planting date
- Insurance coverage
- Purchase of inputs
- Marketing

During the growing season



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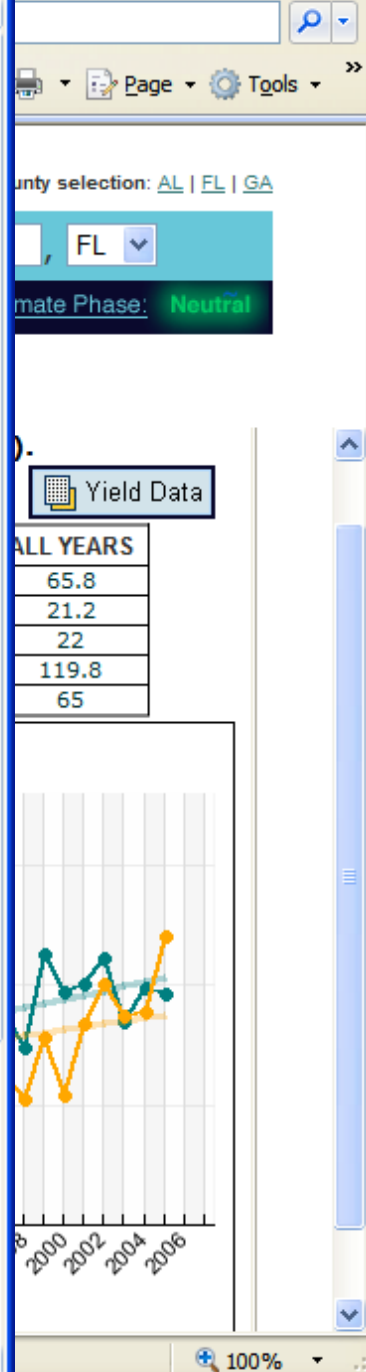


AgClimate
Tools

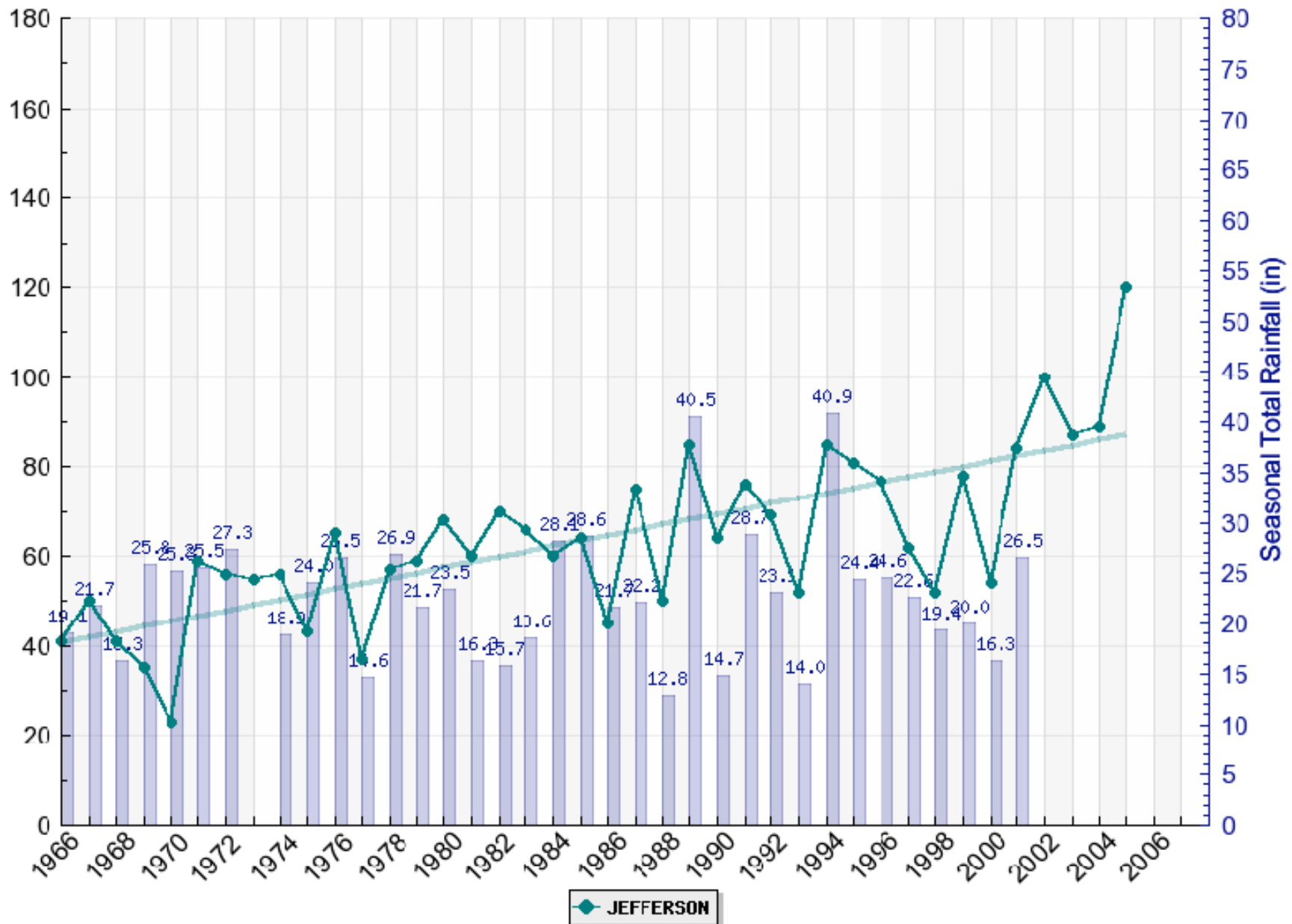


NEUTRAL
EL NIÑO
LA NIÑA

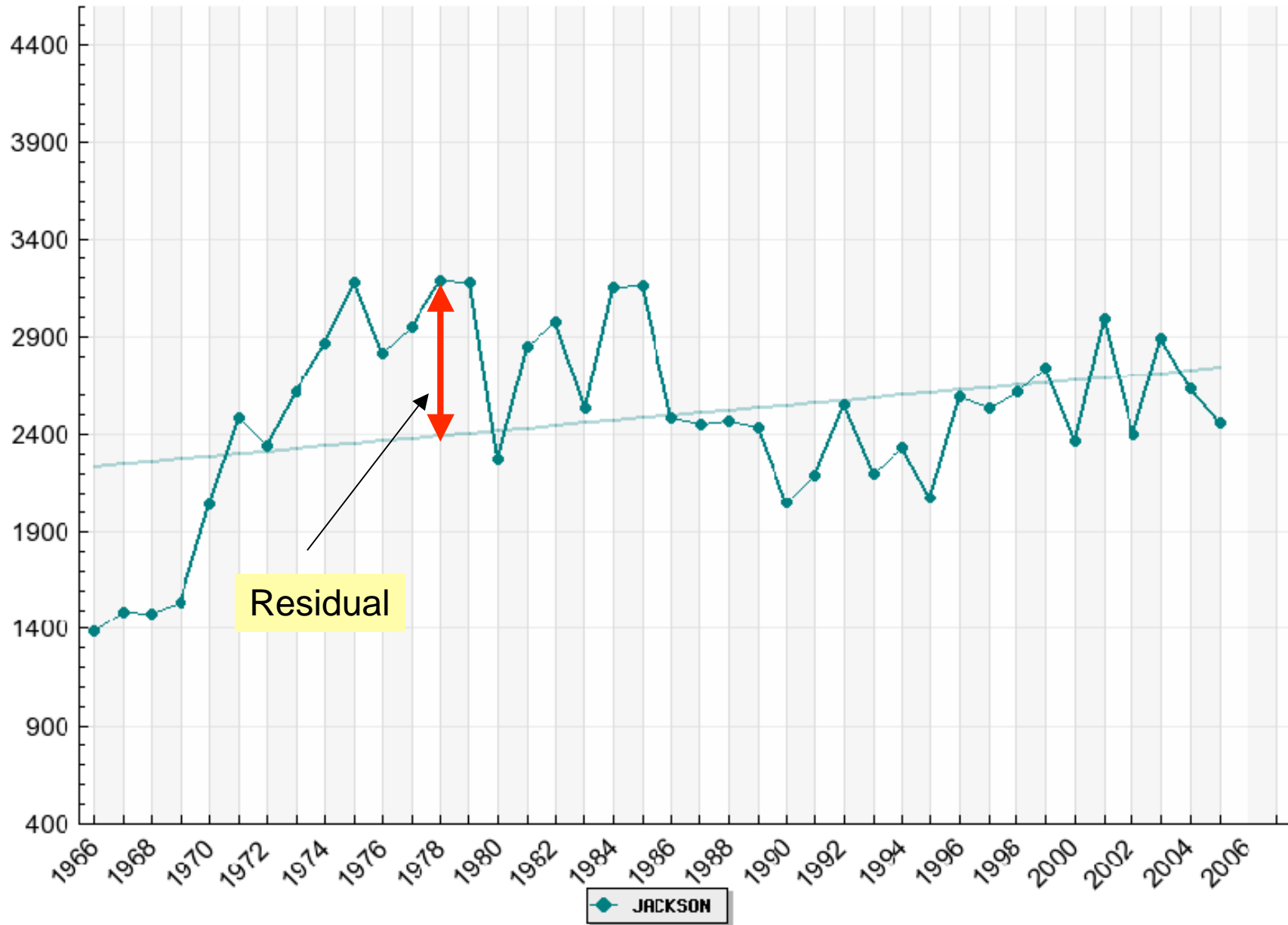
COUNTY	JACKSON		JEFFERSON	
YEARS	Yield	Residuals	Yield	Residuals
1966	45.00	30.0	41.00	1.0
1967	45.00	23.8	50.00	19.7
1968	37.00	-2.9	41.00	-4.6
1969	32.00	-19.7	35.00	-20.8
1970	28.00	-32.7	23.00	-49.3
1971	52.00	20.0	59.00	26.7
1972	43.00	-4.6	56.00	17.3
1973	37.00	-21.0	55.00	12.4
1974	38.00	-21.8	56.00	11.7
1975	37.00	-26.5	43.00	-16.2
1976	53.00	1.8	65.00	23.8
1977	22.00	-59.1	37.00	-31.1
1978	55.00	-1.0	57.00	3.8
1979	60.00	4.7	59.00	5.2
1980	65.00	10.1	68.00	18.7
1981	86.00	41.5	60.00	2.6
1982	80.00	28.0	70.00	17.3
1983	70.00	8.9	66.00	8.5
1984	80.00	21.2	60.00	-3.3
1985	76.00	12.2	64.00	1.2
1986	50.00	-28.1	45.00	-30.1
1987	70.00	-1.7	75.10	14.5
1988	60.00	-17.8	50.00	-25.2
1989	85.00	13.7	85.00	25.0
1990	69.50	-9.1	63.80	-7.8
1991	78.00	-0.3	76.00	8.0
1992	82.00	2.5	69.00	-3.6
1993	68.00	-16.8	52.00	-28.5
1994	91.90	10.1	85.00	14.9
1995	85.00	-0.2	80.70	7.4
1996	88.10	1.2	77.20	1.1



USDA-NASS Yield (bu/ac), Season: May-Aug



USDA-NASS Yield (lbs/ac) Peanut





Map for county selection: AL | FL | GA

County/State JACKSON, FL

Current Climate Phase: Neutral

AgClimate Tools



CORN
 Yield Residuals

Seasonal Climate
 None Rain Temp

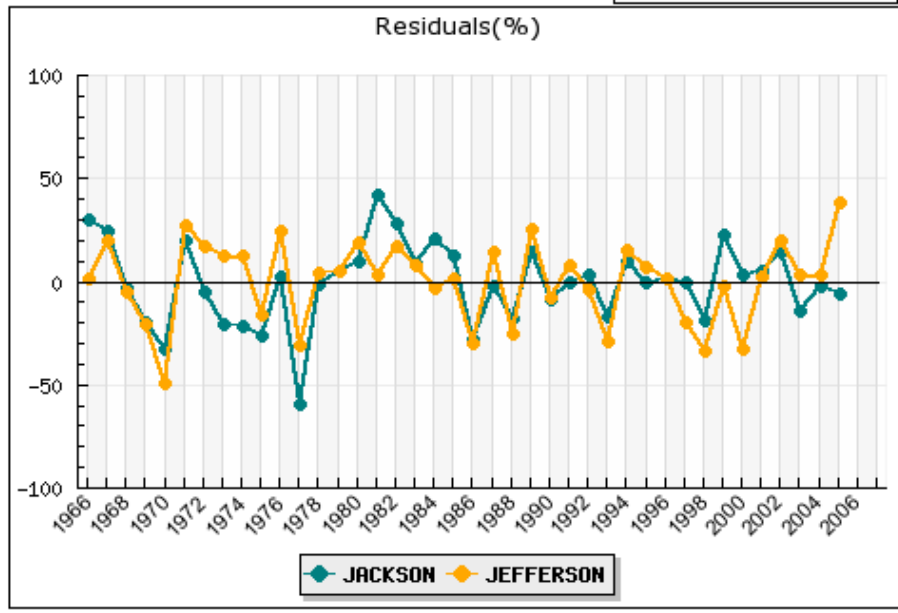
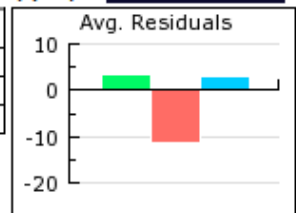
- State + County
- FL
 - Select County---
 - ALACHUA
 - BAKER
 - BAY
 - BRADFORD
 - CALHOUN
 - COLUMBIA
 - DIXIE
 - DUVAL
 - ESCAMBIA
 - FLAGLER
 - GADSDEN

Residuals (%) for selected County(ies).

*Basic statistics calculated for selected county(ies)

Yield Data

	NEUTRAL	EL NIÑO	LA NIÑA
Average	3.3	-11.3	3
Minimum	-30.1	-59.1	-32.9
Maximum	41.5	30	26.7



Click on the graph to expand

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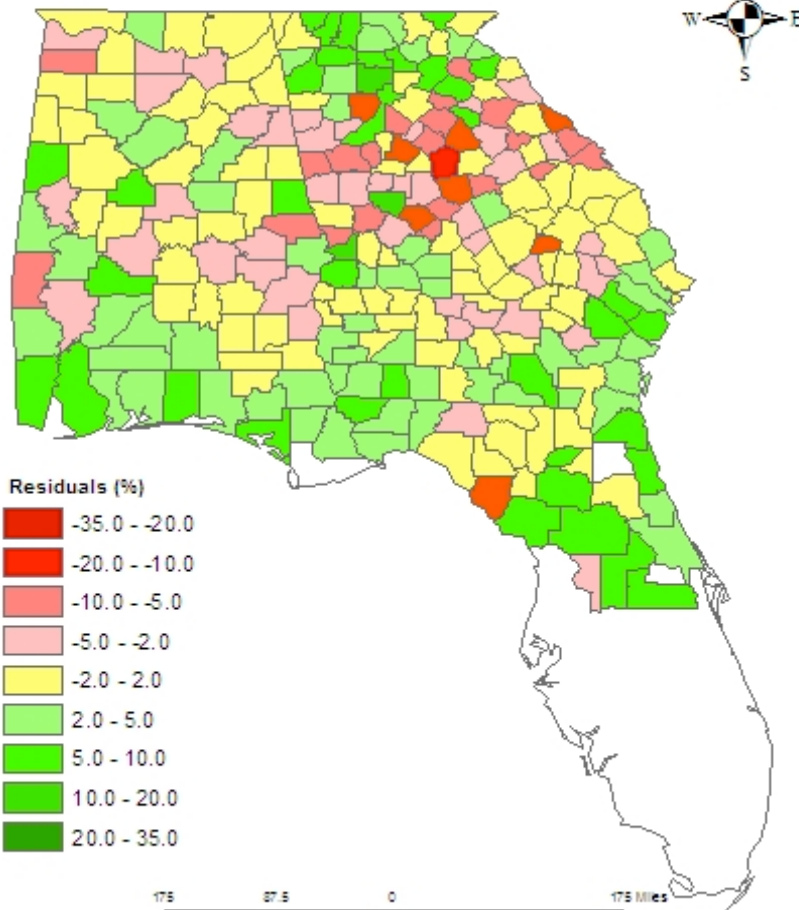


CORN

- NEUTRAL
- EL NIÑO
- LA NIÑA

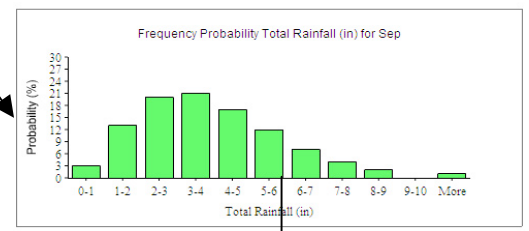
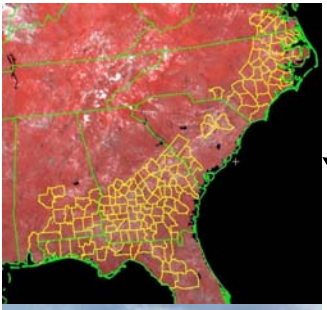
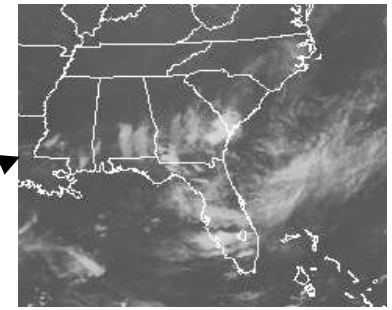
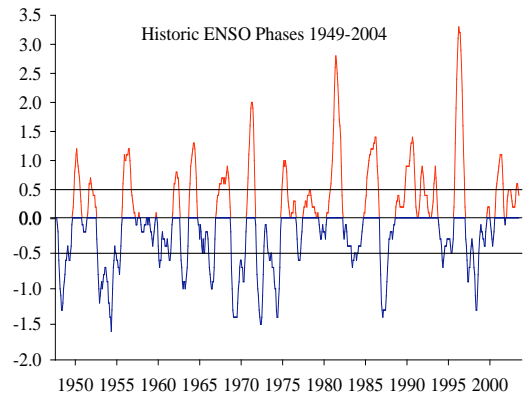
The map represents average yield residuals calculated for the selected commodity. Positive values (green colored counties) indicate that yields are on average good during the selected climate scenario (Neutral, EL Niño, or La Niña).

Average Com Residuals - Neutral Years



175 07.5 0 175 Miles

Crop Modeling & Yield Forecasting



Variety
Planting Date
Plant Population
Soils

SOUTHEAST CLIMATE CONSORTIUM
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County/State

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County/State: LEVY, FL

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Current Climate Phase: **Neutral**

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Yield Risk Forecast



PEANUT
 Variety: Mid-Maturity

State + County: FL, LEVY

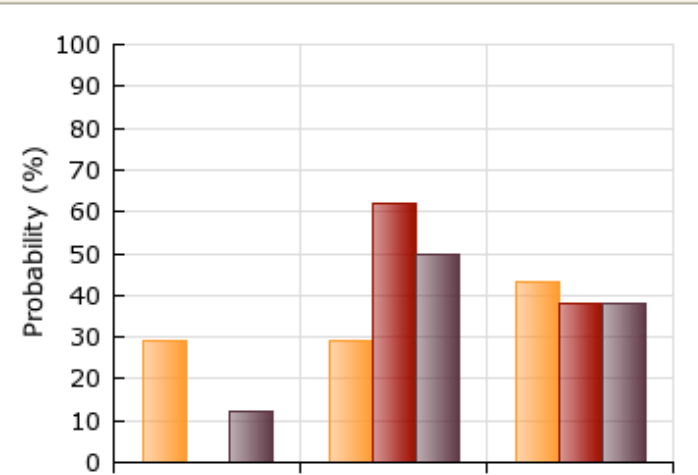
Irrigated Rainfed

Nitrogen: 0 lbs/ac

Soil: Albany Sand

ALL YEARS NEUTRAL
 EL NIÑO LA NIÑA

Frequency Probability for LA NIÑA Years Compare ENSO Phases



Probability (%)

Low Yield Median Yield High Yield

Planting Dates

- 16 Apr
- 23 Apr
- 1 May
- 8 May
- 15 May
- 22 May
- 29 May
- 5 Jun
- 12 Jun

Planting ■ - Flowering ■ - Maturity ■

Dates	Apr	May	Jun	Jul	Aug	Sep
23 Apr	■		■			■
8 May		■	■			■
22 May		■	■			■

Click on graphs to see the details.

Done Internet 100%

Crop model-based yield risk

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Yield Risk Forecast



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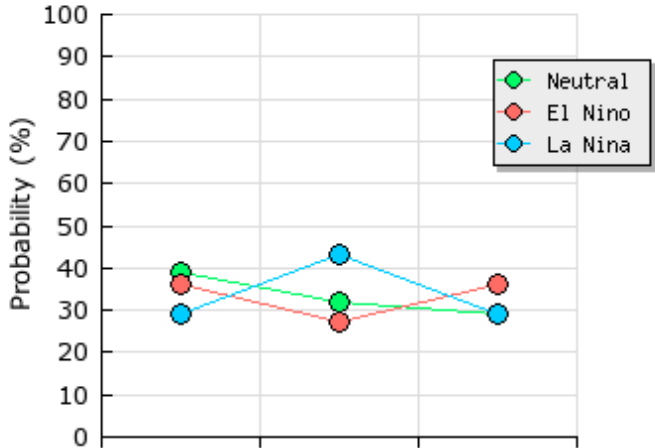
Irrigated Rainfed

Nitrogen: 0 lbs/ac

Soil: Millhopper Sand

ALL YEARS NEUTRAL
 EL NIÑO LA NIÑA

Frequency Probability for LA NIÑA Years Compare ENSO Phases



Yield Category	Neutral (%)	El Niño (%)	La Niña (%)
Low Yield	40	38	30
Median Yield	33	28	45
High Yield	30	38	30

Planting Dates

- 16 Apr
- 23 Apr
- 1 May
- 8 May
- 15 May
- 22 May
- 29 May
- 5 Jun
- 12 Jun

Planting Flowering Maturity

Dates	Apr	May	Jun	Jul	Aug	Sep
23 Apr	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>

Click on graphs to see the details.

Internet 100%

Crop model-based yield risk












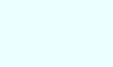
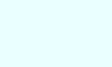






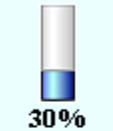
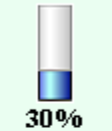
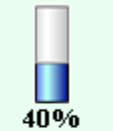
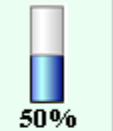
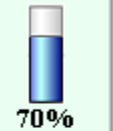
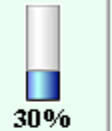
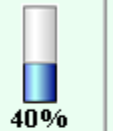
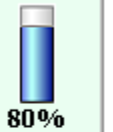










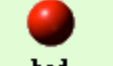





Plans for 2007

- Add cotton and corn to the yield risk tool
- Start running the model for in-season updates
- Test tools for short-term forecasts

County [map](#)



























[Next 24 Hours](#)

[5 Day Forecast](#)

Alachua, Forecast for next 24 hours, starting at 7am, June 11								
 TIME	7am	10am	1pm	4pm	7pm	10pm	1am	4am
SKY (%)	 0%	 0%	 30%	 40%	 100%	 0%	 100%	 60%
PRECIPITATION Amount (inch) Probability (%)	 0 90%	 0 100%	 30 30%	 40 45%	 40 50%	 70 50%	 70 100%	 70 90%
TEMP. (F°)	80°	82°	81°	81°	75°	60°	61°	59°
DEW POINT (F°)	59°	66°	77°	50°	79°	99°	99°	59°
RELATIVE HUMIDITY (%)	 30%	 30%	 40%	 50%	 70%	 30%	 40%	 80%
WIND (mph) Direction	1 SW	2 SW	5 W	0 SW	2 SE	10 SW	25 W	25 W
SPRAYING CONDITIONS	 good	 good	 fair	 bad	 n/a	 bad	 bad	 fair
DRYING CONDITIONS	 fair	 fair	 bad	 n/a	 bad	 good	 fair	 fair
LEAF WETNESS	NO	NO	YES	YES	NO	NO	YES	YES

24 hours
forecast

Alachua, Forecast for 5 Days, Starting June 12 at 7am

 DAY	1 Day	2 Day	3 Day	4 Day	5 Day
SUNRISE TIME	7am	7:15am	7:20am	7:20am	7:25am
SUNSET TIME	7pm	6:55pm	6:55pm	6:50pm	6:50pm
DAY PRECIPITATION Amount (inch) Probability (%)	 0 90%	 0 100%	 40 45%	 40 50%	 70 50%
NIGHT PRECIPITATION Amount (inch) Probability (%)	 40 45%	 40 50%	 0 90%	 70 50%	 70 50%
HIGH TEMPERATURE (F°)	 90 F°	 85 F°	 95 F°	 80 F°	 75 F°
LOW TEMPERATURE (F°)	 50 F°	 60 F°	 32 F°	 50 F°	 30 F°
MORNING WIND (mph) Direction	1 S	1 S	10 Varies	9 W	20 SW
AFTERNOON WIND (mph) Direction	10 NW	15 Varies	20 Varies	30 S	10 E
LEAF WETNESS	NO	NO	YES	YES	NO
DRYING CONDITIONS	 fair	 fair	 bad	 n/a	 bad
LIVESTOCK STRESS	YES	YES	NO	NO	YES
GROWING DEGREE DAY 50	28	28	27	26	25
GROWING DEGREE DAY 60	18	18	17	17	16

5-day
forecast



AgClimate

A Service of the Southeast Climate Consortium

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Map for county selection: [AL](#) | [FL](#) | [GA](#)

County/State **JACKSON**, **FL**

Home Help Contact

Current Climate Phase: **Neutral**

AgClimate Tools

Growing Degree Days



COTTON

State + County
 FL JACKSON

Starting Time
 May 1

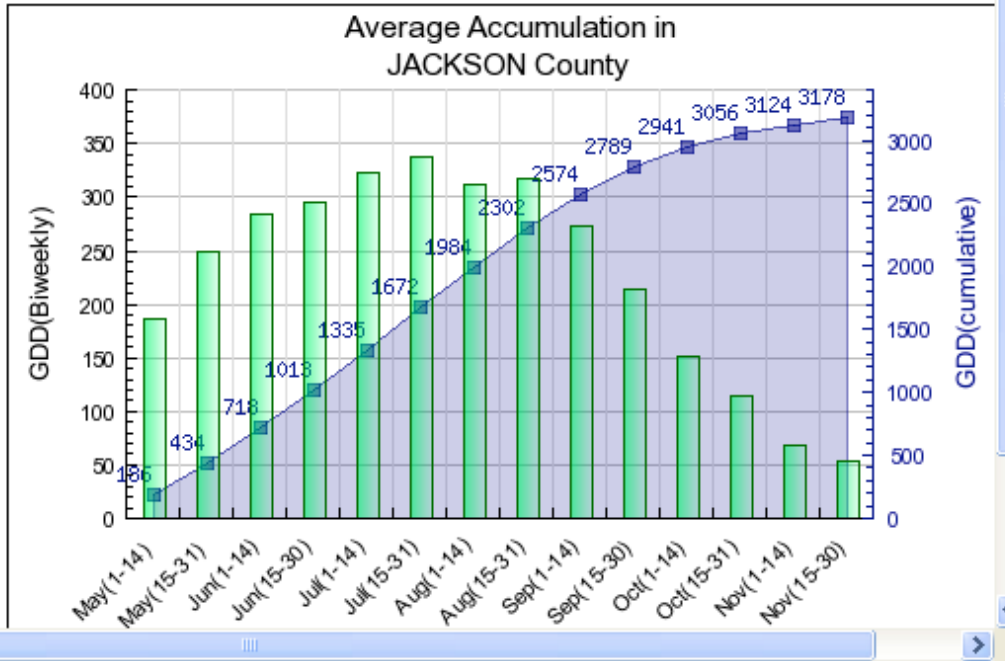
- NEUTRAL
- EL NIÑO
- LA NIÑA
- ALL YEARS

Avg and Deviation Frequency Probability Probability of Exceeding Last 5 Years

Average and Deviation (from All Years).

	May		Jun		Jul		Aug		Sep		Oct		Nov
	1-14	15-31	1-14	15-30	1-14	15-31	1-14	15-31	1-14	15-30	1-14	15-31	1-14 15-31
Avg.	186	248.3	284.2	295.4	322.2	337.4	311.9	317.7	272.3	214.9	151.7	114.5	67.5
Dev.	-1.3	-2.3	3.7	-3.3	4.2	-0.9	-0.5	-5.2	1.9	-9.3	-6.7	3.9	0.5

*Statistics are calculated for JACKSON county.



Growing degree-days or heat units