

# Using the UK Ag Weather Center for Water Management Purposes in the Bluegrass State

*April 29, 2015 – Kentucky Farm Bureau*

## **Matt Dixon**

Meteorologist  
UK Ag Weather Center

*Department of Biosystems and Agricultural  
Engineering*

*UK, Lexington, Kentucky*

[mdi227@uky.edu](mailto:mdi227@uky.edu)

(859) 218-4363

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## **Tom Priddy**

Director/Extension Meteorology Specialist

[priddy@uky.edu](mailto:priddy@uky.edu)

(859) 218-4364

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## **Dr. Wanhong Wang**

Programmer/Systems Administrator

[wwang@uky.edu](mailto:wwang@uky.edu)

(859) 218-4365



Photo Credit: Matt Barton, UK College of Agriculture

# Early Days



- Tom Priddy started at UK in 1978
- Green Thumb – Brought on demand market, futures, and weather information.
- 100 farmers in 2 counties as a pilot project. Viewed on televisions by accessing county computers using a telephone line
- Keypad allowed farmers the option to choose what they wanted to view.



- AGTEXT - Worked with KET to distribute closed captioning information to anyone across Kentucky. Forecasts were updated real time.
- Netscape in the 1990s, before the World Wide Web became established

# Present

- Cluster of 20 computers used to run numerous weather models and digest data. Ten units are used for the Weather Research Forecast model.
- Others produce 25,000 maps a day.
- Summarize weekly and monthly weather information for USDA Kentucky Crop Progress and Condition Report
- Winter Cancellations at UK
- Frost/Freeze Warnings
- Provide information for updating the US Drought Monitor
- Issuing livestock stress warnings



## Kentucky Climate Summary For the Period April 20, 2015 to April 26, 2015

### Below Normal Temperatures and Rainfall:

The Commonwealth cannot catch much of a break this spring season. For the first time since the last week of March, Kentucky saw below normal rainfall. With that in mind, the state did see subfreezing temperatures later in the work week and a round of severe weather on Saturday. The work week started out with a couple cold fronts passing through the area on Monday and Wednesday. Scattered showers and isolated thunderstorms developed with each round, but didn't amount to much in the way of accumulations. The bigger story was the very cool temperatures that filtered into the area Wednesday and Thursday nights, bringing with it the threat of frost and subfreezing temperatures. Temperatures fell into the low to mid 30s Wednesday night for some locations, but was outdone Thursday night as high pressure shifted overhead. Clearing skies and a calm wind led to many locations across the eastern half of the state dropping into the upper 20s to low 30s. This was roughly 20 degrees below normal for late April. Attention then turned to severe weather as a warm front hung up across the Commonwealth on Saturday. Storms fired later in the evening within a warm and unstable air mass. Some storms produced very large hail (multiple reports at 2 inches +), damaging winds, and a few tornadoes were also surveyed: EF2 in Edmonson County, EF1 in Adair, and EF0 in Henderson. Through the event, the state averaged just under a half inch.

Temperatures for the period averaged 54 degrees across the state which was 4 degrees cooler than normal and 8 degrees cooler than the previous period. High temperatures averaged from 66 in the West to 64 in the East. Departure from normal high temperatures ranged from 6 degrees cooler than normal in the West to 7 degrees cooler than normal in the East. Low temperatures averaged from 47 degrees in the West to 43 degrees in the East. Departure from normal low temperature ranged from 1 degree cooler than normal in the West to 1 degree warmer than normal in the East. The extreme high temperature for the period was 83 degrees at POPLAR BLUFF ASOS and the extreme low was 26 degrees at FORT CAMPBELL.

Precipitation (liq. equ.) for the period totaled 0.88 inches statewide which was 0.14 inches below normal and 86% of normal. Precipitation totals by climate division, West 0.75 inches, Central 0.83 inches, Bluegrass 0.95 inches and East 1.00 inches, which was -0.44, -0.20, 0.01 and 0.06 inches respectively from normal. By station, precipitation totals ranged from a low of 0.31 inches at CARBONDALE ASOS to a high of 1.73 inches at WHITESBURG 2NW.

### KENTUCKY TEMPERATURES AND RAIN FALL FOR WEEK ENDING SUNDAY, 04/26/15 4 p.m.

Weather Station	Precipitation		Deviation From Norm 4 In. Since Jan 1	Temperatures					Air Temp. Dev. From Normal
	Last Week	Since Jan 1		Soil 4 In. High	Air High	Wkly. Avg.			
	(Inches)	(Inches)	(Inches)	(Degrees Fahrenheit)	(Degrees Fahrenheit)	(Degrees Fahrenheit)	(Degrees Fahrenheit)	(Degrees Fahrenheit)	(Degrees Fahrenheit)
Bardstown	0.83	23.97	10.14	62	55	74	33	54	-5
Berea	1.44	23.34	9.60	62	55	67	30	52	-6
Bowling Green	0.88	21.08	4.29	62	55	81	35	58	-1



# Agricultural Weather Center

## University of Kentucky



Research

DAY	MONDAY					TUESDAY				
EST 3HR	1P	4P	7P	10P		1A	4A	7A	10A	1P
MAX/MIN	--	--	6°	--	--	--	-5°	--	--	10°
TEMP	0°	-1°	-2°	-4°	-4°	-4°	-4°	-1°	7°	10°
Sky Cover	56%	60%	68%	65%	61%	53%	46%	37%	29%	34%
Clouds										
DEW PT	-10°	-12°	-12°	-10°	-11°	-10°	-9°	-6°	-6°	-1°
RH	62%	59%	61%	75%	71%	74%	78%	79%	54%	61%
POP 12HR	--	--	23%	--	--	--	6%	--	--	6%
Rain/Snow	0.00in	--	0.00in	--	0.00in	--	0.00in	--	0.00in	--
Wind Speed	23	18	16	15	14	13	14	15	15	14
Wind Gust	31	31	26	26	18	18	22	24	25	24
Wind Dir	W	W	W	W	W	W	W	SW	W	SW
DEW	--	--	--	--	--	--	--	--	--	--
Snow	--	--	--	--	--	--	--	--	--	--
SnowShowers	Periods of	Periods of	Scattered	Scattered	Scattered	Scattered	Scattered	Scattered	--	--

Forecasting



Modeling

What we do?



Teaching





Extension



Event Forecasting

UNIVERSITY OF KENTUCKY  
College of Agriculture, Food and Environment  
BAE

UKAg WEATHER CENTER



Home | Current Weather | Forecast | Climate | Ag Models | Ag Review | Data | Radar/Maps | KyMesonet | Mobile

Point Ag Forecast

Kentucky Forecast

EDEN Next 48

Rainfall At Your Farm

Disease/Insect Models

Irrigation Manager

Previous Webpages

Zipcode or County, State

Ag Weather Forecast

Ag Weather Synopsis

Tweets

Follow

UK Ag Weather Center  
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Short Dry Period Then Active Weather Pattern begins...  
weather.uky.edu/ky/forecas

UK Ag Weather Center  
@UKAGweather  
Wet Spell Continues; Freezing Rain Advisory For Far West...  
weather.uky.edu/ky/forecas

UK Ag Weather Center  
@UKAGweather  
Wet Spell Ahead; Turning Colder Monday...  
weather.uky.edu/ky/forecas

Statewide 5-Day Weather Conditions


Mouse over Date-Menu for 5-Day NWS Forecasts.  
Click Number on Map for County Ag. Forecast.

Daily Highest Temp(°F)  
12/02/14 Tuesday

Lexington | Paducah | Owensboro | Hopkinsville | Elizabethtown | Bowling Green | Louisville | Covington

Frankfort | Georgetown | Richmond | Jackson | Hazard | Pikeville

Nowcast



43°F

Dewpoint

38F

Windspeed

5 mph

Humidity

83%

Probability of Precip

30%

Surviving Conditions

Good

Drying Conditions

Good

Livestock Stress

None

Daily Summary for Lexington

DAY	TUE	WED	THU	FRI	SAT	SUN	MON
TEMP Hi/Low	44 / 34	50 / 40	44 / 33	54 / 38	52 / 45	48 / 40	50 / 40
Rain/Pop(%)	0.13 / 98	0.04 / 28	0.06 / 34	/ 59	/ 67	/ 21	/ 21
RH(%) Hi / Low	100 / 82	100 / 68	80 / 62	92 / 80	97 / 82	80 / 68	80 / 68
Dew PT Hi/Low	41 / 33	41 / 35	34 / 29	48 / 37	47 / 42	39 / 37	40 / 37
Windspeed Hi/Low	9 / 6	12 / 5	7 / 6	6 / 5	8 / 6	6 / 5	7 / 3
Evapotranspiration	0.02	0.04	0.03	0.03	0.03	0.03	0.03
GDD/Acc GDD	0 / 3775	0 / 3775	0 / 3775	2 / 3775	1 / 3776	0 / 3776	0 / 3776

\*GDD-Growing Degree Days. Acc.GDD-Accumulated from Apr.1 to date.

Old Page

Statewide 5-Day Weather Conditions

News Section

7-Day Daily Summary



# New Point Ag Forecast

## UKAWC PointAgCast/Severe Weather Info

( Based on NWS National Digital Forecast Database & SPC )

Input zip code or county,state(e.g.,40504 or Fayette,KY)

Submit

OR

Click your location on Google Map. Make sure the zipcode input above is empty if you want to use this one



Latitude:  Longitude:

Submit

# Output of Point Ag Forecast

## UKAWC Point Agricultural, Lawn & Garden Forecast/Outlook

( Based on NWS National Digital Forecast Database )

JEFFERSON Co., KY

ISSUED AT 06:00 ON WEDNESDAY APR 29 2015

### Daily Summary

#### Nowcast



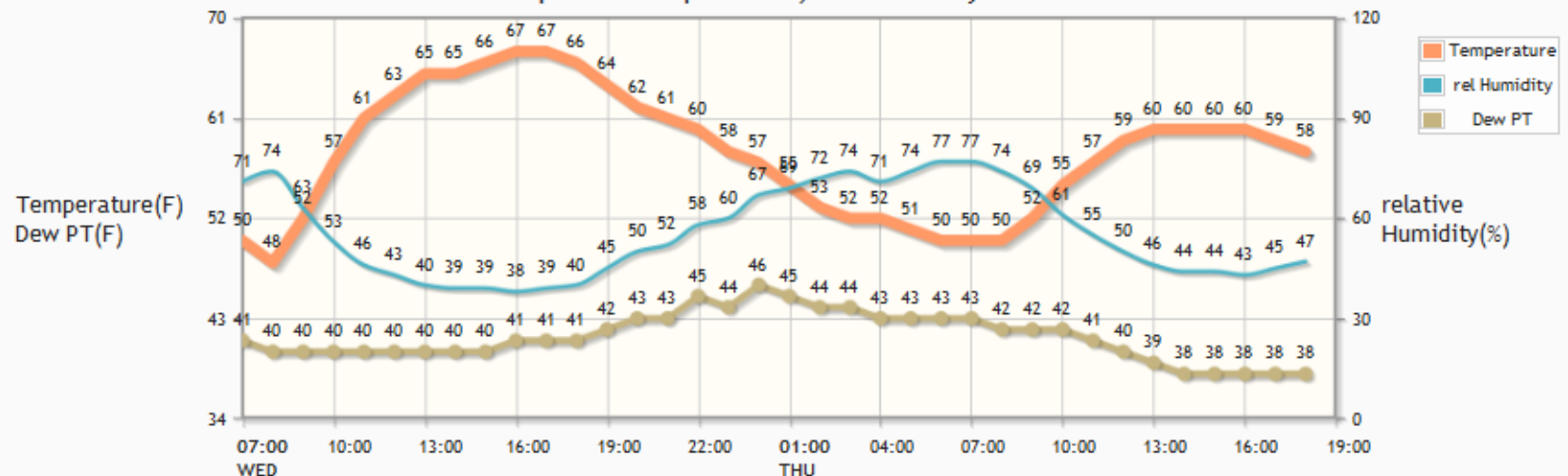
50°F

Dewpoint 41°F  
Windspeed 2 mph  
Humidity 71%  
Probability of Precip 3%  
Spraying Conditions **Good**  
Drying Conditions **Fair**  
Livestock Stress **None**

DAY	WED	THU	FRI	SAT	SUN	MON	TUE
<u>TEMP Hi/Low</u>	68 / 47	58 / 51	69 / 44	73 / 51	76 / 54	79 / 59	79 / 59
<u>Rain/Pop(%)</u>	0.01 / 17	0.22 / 53	0 / 14	/ 5	/ 16	/ 16	/ 27
<u>RH(%) Hi/Low</u>	80 / 42	77 / 55	86 / 44	77 / 38	77 / 45	81 / 45	84 / 47
<u>Dew PT Hi/Low</u>	46 / 41	46 / 42	46 / 41	49 / 45	54 / 49	55 / 53	57 / 55
<u>Windspeed Hi/Low</u>	7 / 1	13 / 3	8 / 7	6 / 3	8 / 3	13 / 6	9 / 5
<u>Evapotranspiration</u>	0.13	0.12	0.16	0.16	0.15	0.19	0.16
<u>GDD/Acc GDD</u>	9 / 289	5 / 294	10 / 303	12 / 315	15 / 330	19 / 349	19 / 368

\*GDD-Growing Degree Days. Acc.GDD-Accumulated from Apr.1 to date.

### 36 Hour Graph for Temperature, rel Humidity and Dew Point



## Output of Point Ag Forecast cont.

[illegible]



## Output of Point Ag Forecast cont.

[illegible]

# Rainfall @ Your Farm or Nursery

## UKAWC Numerical Rainfall Estimates

For Daily, Weekly, Last 1 to 365 Days and Departures

( Based on NWS Doppler Radar Estimates and Adjusted by Actual NWS Rainfall Observations )

( Not For Legal Purposes )

( [About This Rainfall Estimate](#) (Based on 24 hour periods from 7 am to 7 am) )

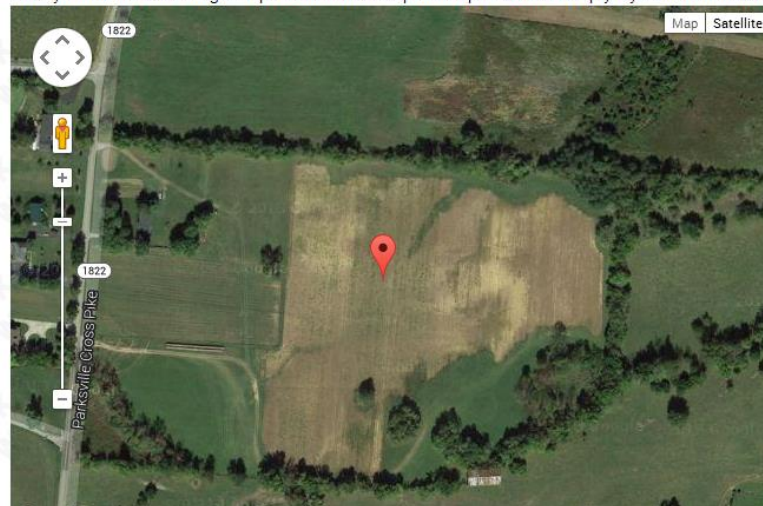
( Users select their location and time period. )

### 1. Select your location

Input zip code or county,state(e.g., 40504 or Fayette,KY).

OR

Click your location on Google Map. Make sure the zipcode input above is empty if you want to use this one



### 2. Select time period

Select last 1,3,6,9 months

OR

Select starting date (starting from 01/02/2005 or late)

 /  / 

MM

DD

YYYY

Select ending date

 /  / 

MM

DD

YYYY

Submit

# Output of Rainfall @ Your Farm or Nursery

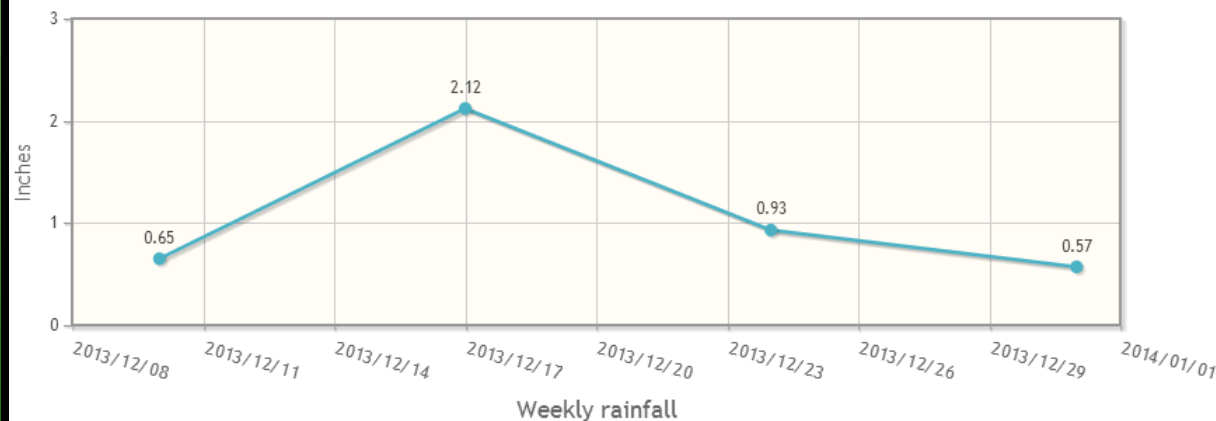
Daily Rainfall Estimates (inch), [Summary of each Week](#)

months: 01 12

Date	Prec	Date	Prec	Date	Prec	Date	Prec	Date	Prec	Date	Prec	Date	Prec	Sum
20140106	0.38	20140105	0.00	20140104	0.00	20140103	0.17	20140102	0.02	20140101	0.00	20131231	0.00	0.57
20131230	0.16	20131229	0.77	20131228	0.00	20131227	0.00	20131226	0.00	20131225	0.00	20131224	0.00	0.93
20131223	0.01	20131222	1.53	20131221	0.56	20131220	0.00	20131219	0.00	20131218	0.01	20131217	0.01	2.12
20131216	0.00	20131215	0.37	20131214	0.22	20131213	0.00	20131212	0.00	20131211	0.03	20131210	0.03	0.65
20131209	0.43	20131208	0.36											0.79

Total for 30 days: 5.06

Rainfall Estimates (inch)			
Previous Date	Total	Normal	Departure
Last 1 Days	0.38	0.12	0.26
Last 3 Days	0.38	0.36	0.02
Last 7 Days	0.57	0.84	-0.27
Last 14 Days	1.5	1.82	-0.32
Last 30 Days	5.06	4.06	1.00





# Drought 2012

## U.S. Drought Monitor Kentucky

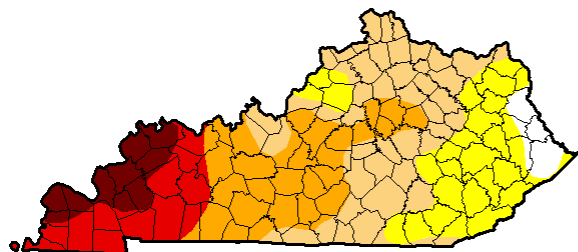
July 17, 2012

(Released Thursday, Jul. 19, 2012)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	3.52	96.48	74.68	43.92	20.32	7.81
Last Week 7/10/2012	0.00	100.00	86.84	46.86	20.32	2.49
3 Months Ago 4/17/2012	61.71	38.29	8.16	0.00	0.00	0.00
Start of Calendar Year 1/3/2012	100.00	0.00	0.00	0.00	0.00	0.00
Start of Water Year 9/27/2011	86.72	13.28	0.04	0.00	0.00	0.00
One Year Ago 7/19/2011	100.00	0.00	0.00	0.00	0.00	0.00



### Intensity:

D0 Abnormally Dry	D3 Extreme Drought
D1 Moderate Drought	D4 Exceptional Drought
D2 Severe Drought	

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:  
Richard Heim  
NCDC/NOAA



<http://droughtmonitor.unl.edu/>



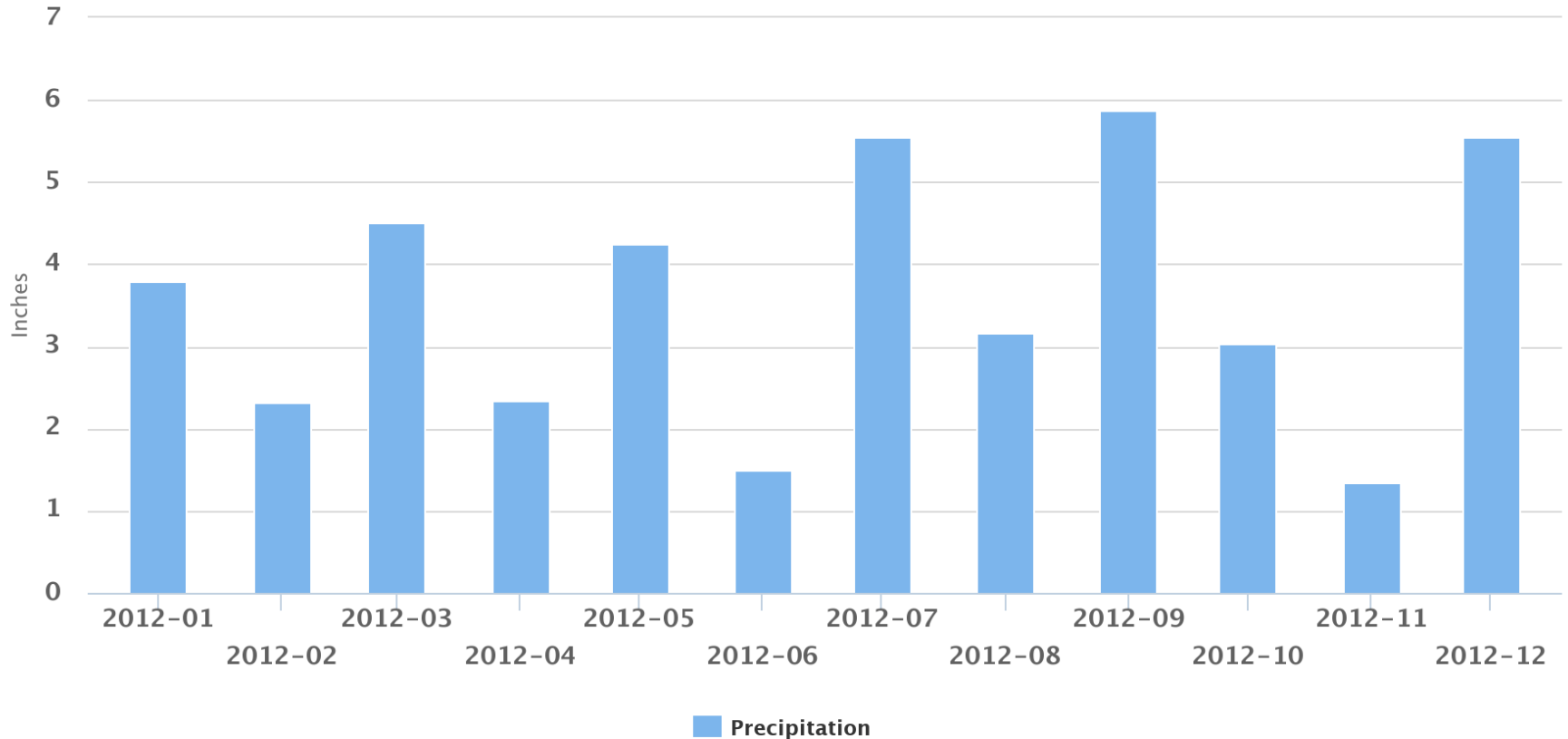
Summarized and averaged data for the period 20120618 to 20120624 (Last 7 Days)  
(Not for Legal purposes. Departure from Norms based on climate divisional Averages)

STATION	AIR TEMPERATURE						PRECIPITATION			ExtremeTemp	
	MAX	DEV	MIN	DEV	AVR	DEV	TOTAL	DEV	%NORM	HI	LO
WEST (CD1)	92	5	65	0	79	3	0.01	-1.00	1	99	55
CENTRAL (CD2)	90	5	65	2	77	3	0.00	-1.01	0	98	55
BLUEGRASS (CD3)	89	5	66	4	77	4	0.02	-0.99	2	94	55
EAST (CD4)	90	6	65	5	77	5	0.13	-0.90	13	95	55
STATE	90	5	65	2	78	4	0.04	-0.98	4	99	55

# Drought 2012

Monthly Output of Precipitation Data for Kentucky

Midwestern Regional Climate Center



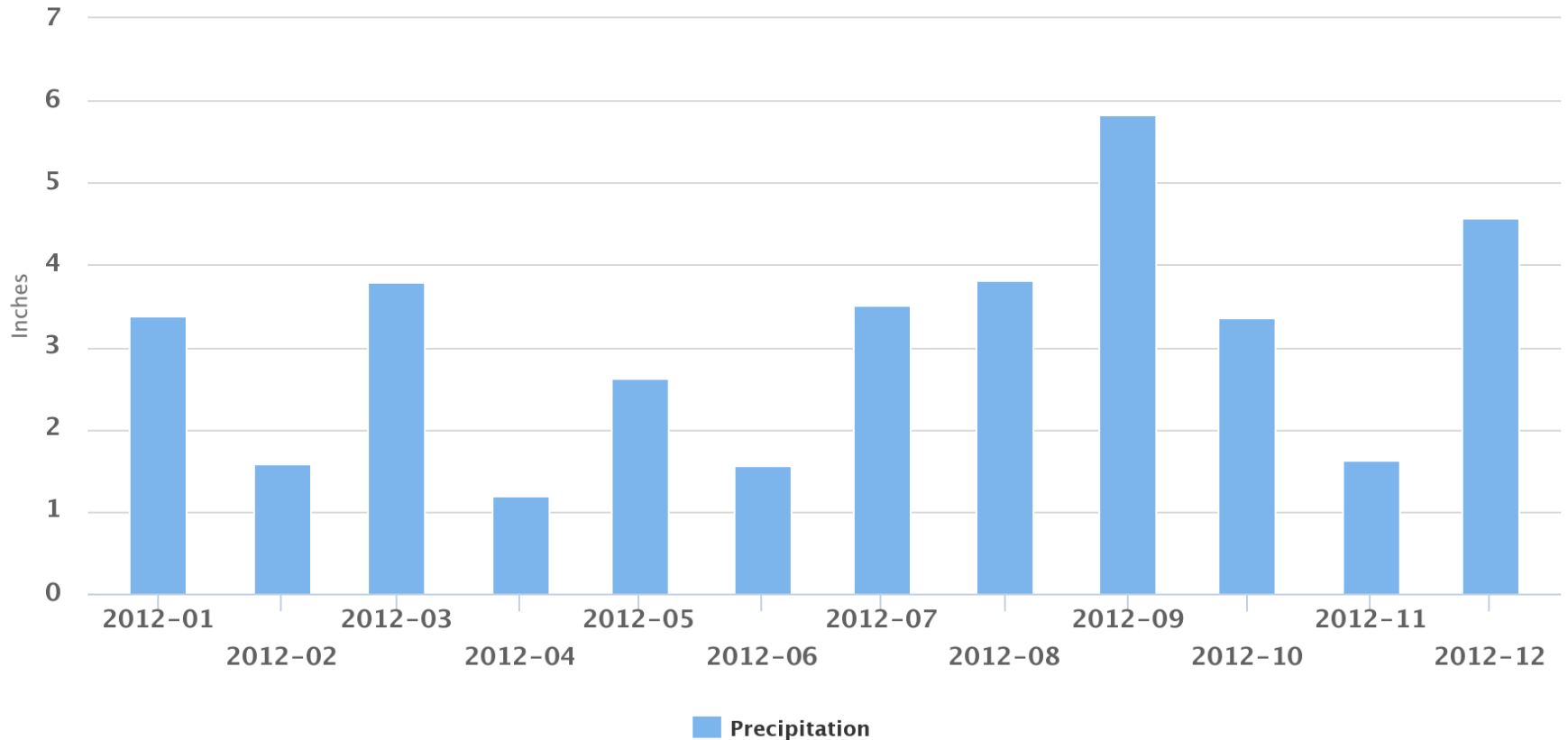
Click and drag to zoom.

**Lack of Precipitation Statewide**

# Drought 2012

Monthly Output of Precipitation Data for Climate Division KY01

Midwestern Regional Climate Center



Click and drag to zoom.

**Lack of Precipitation Statewide**



# Drought 2012

## Paducah Climate Data

This weather data provided by the University of Kentucky  
Agricultural Weather Center (Phone (859)257-3000 Ext245)  
World Wide Web URL: <http://www.agwx.ca.uky.edu/>

STATION	DATE	AIR TEMP			PRECIP	RH		SOIL TEMP				EVAP
		MX	MN	AV		MX	MN	GRASS	BARE	MX	MN	
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Paducah	06-27-2012	98	54	76		90	14	77	62			
Paducah	06-28-2012	105	61	83		75	17	84	78			
Paducah	06-29-2012	108	71	89		81	19	87	79			
Paducah	06-30-2012	106	75	90		71	23	89	81			
Paducah	07-01-2012	105	75	90		73	26	89	83			
Paducah	07-02-2012	101	75	88		78	29	89	83			
Paducah	07-03-2012	97	76	86	0.01	84	39	88	81			
Paducah	07-04-2012	101	74	87	0.25	84	33	88	81			
Paducah	07-05-2012	105	73	89	T	91	23	88	83			
Paducah	07-06-2012	107	76	91	T	79	19	90	82			
Paducah	07-07-2012	104	73	88	T	87	31	90	84			
Paducah	07-08-2012	99	77	88	0.01	94	40	91	85			

Impact of High Temperatures

# Drought 2012

Extension Agronomist, Dr. Chad Lee explained the impacts of drought stress on corn in his presentation titled “Corn Irrigation” (2013), found at:

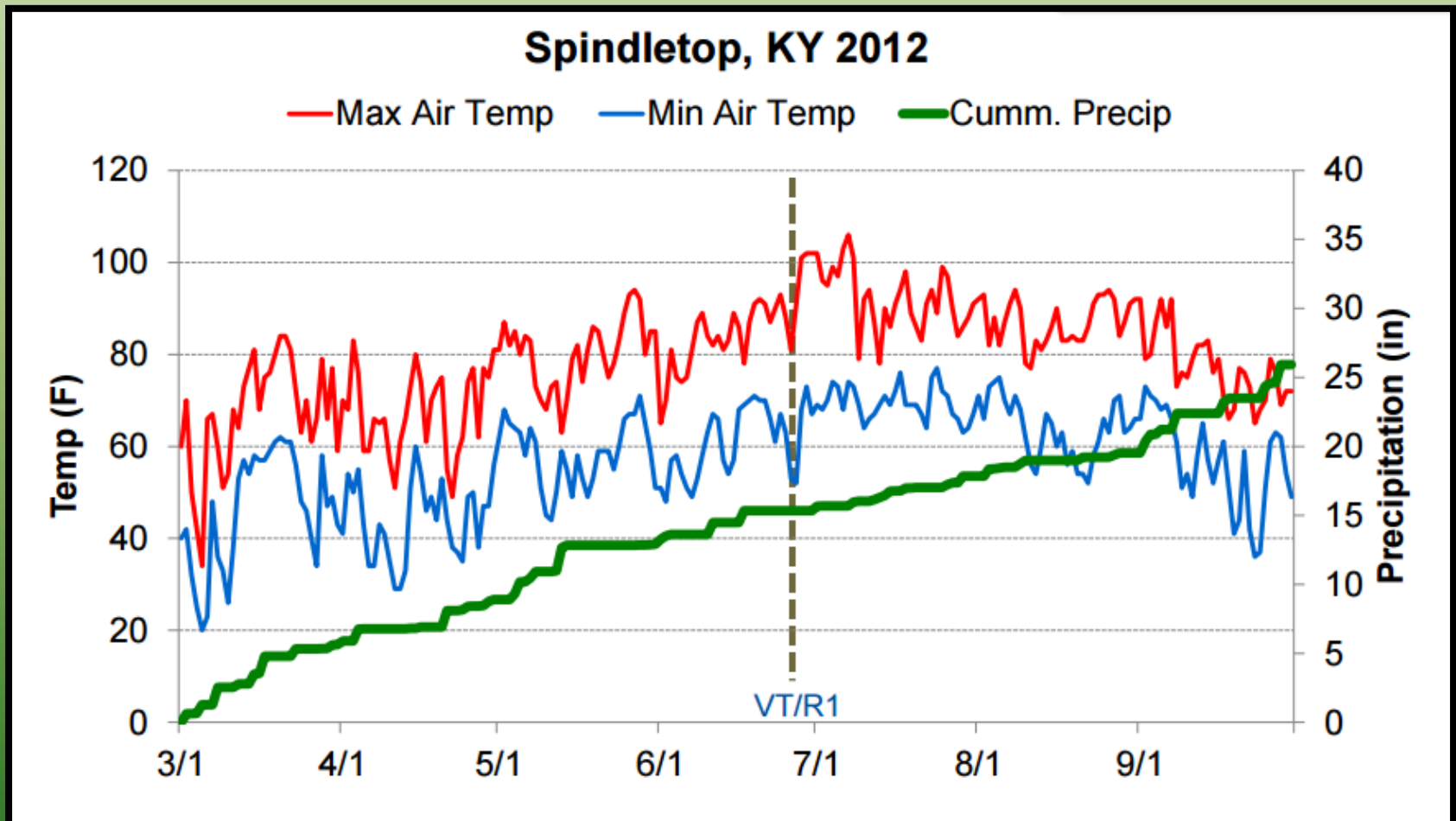
[http://www.uky.edu/Ag/GrainCrops/Briefs/Univ\\_Kentucky\\_Corn\\_Irrigation\\_2013.pdf](http://www.uky.edu/Ag/GrainCrops/Briefs/Univ_Kentucky_Corn_Irrigation_2013.pdf)

## Information from Article

- In Kentucky, corn requires 20 to 25 inches of water.
- The most sensitive stage of development to water stress is in tasseling.
- Yield can be reduced at several stages in growth.

# Drought 2012

Combination of dry conditions and extreme heat took a toll on pollination. Corn needs about 0.3 inches around tassel and silk. – Chad Lee Ph. D. (Corn Irrigation, 2013)



Graph Courtesy: Chad Lee Ph. D., Extension Agronomist



# Drought 2012



**Daviess County – Irrigated and Non-Irrigated ears from same field.**

**Photos Courtesy: Chad Lee Ph. D., Extension Agronomist**

# Drought 2012



**McCracken County – 6/26/12**

**Photo Courtesy : Douglas  
Wilson**

**USDA Kentucky Crop Progress and Condition  
Report – 7/23/12** – “Some cattle producers  
are feeding hay due to poor pasture  
conditions.”

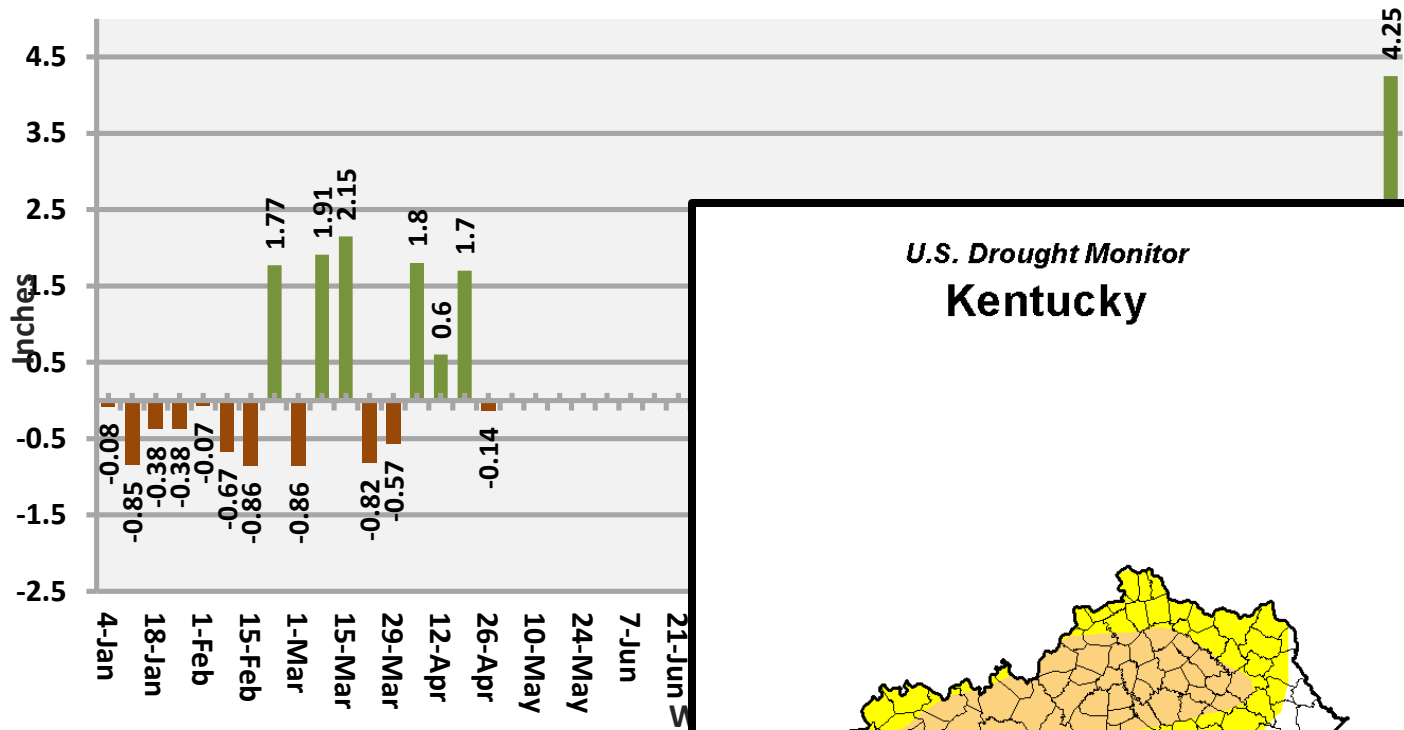


**Crittenden County - 07/09/2012**

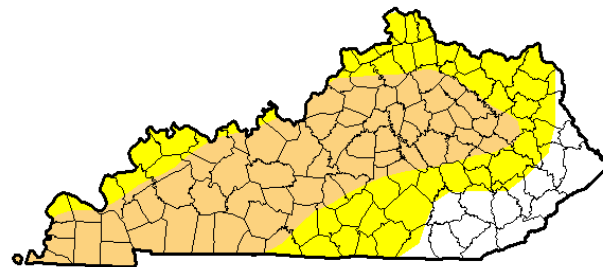
**Photo Courtesy: Nancy Hunt,  
Extension Agent for Family and  
Consumer Sciences**

# Questions Were Raised Again in Early 2015

## Kentucky Weekly Precipitation Departures for 2015



## U.S. Drought Monitor Kentucky



**February 17, 2015**

(Released Thursday, Feb. 19, 2015)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	14.19	85.81	51.46	0.05	0.00	0.00
<b>Last Week</b> 2/10/2015	14.19	85.81	51.46	0.05	0.00	0.00
<b>3 Months Ago</b> 11/19/2014	100.00	0.00	0.00	0.00	0.00	0.00
<b>Start of Calendar Year</b> 12/01/2014	83.53	16.47	0.00	0.00	0.00	0.00
<b>Start of Water Year</b> 9/01/2014	91.70	8.30	0.00	0.00	0.00	0.00
<b>One Year Ago</b> 2/18/2014	100.00	0.00	0.00	0.00	0.00	0.00

Intensity



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

**Author:**

Richard Heim  
NCDC/NOAA



<http://droughtmonitor.unl.edu/>



# Irrigation Manager

## Evapotranspiration Calculation

KY Mesonet

### Introduction to Evapotranspiration

Evapotranspiration is a general way to estimate how much moisture or water your farm is losing on a daily basis. Comparing this data to the daily rainfall totals can give an idea as to whether irrigation is necessary and if so, how much. This program was developed to aid the farmer in this aspect of farm management and maximizing production, while at the same time, saving money. Forecast rainfall totals will also be incorporated in the near future so producers can compare their current water budget to model forecast rainfall totals. This program is based on the following model and calculation procedures outlined by the Food and Agriculture Organization of the United Nations: [ET](#)

### Instructions to this program

This program is very simple to use by just selecting your county and the corresponding dates of interest. This will output a table with the daily estimated amount of evapotranspiration and respective rainfall totals. These are then accumulated over your time period and a difference is generated to show whether your farm is showing a generalized moisture deficit or surplus. The best way to utilize the table would be to select the last day you had irrigated and run the program out to the most recent day. This in combination with forecast data can give a farmer an idea if irrigation is needed at the time.

County:	From:				To:		
Adair ▼	02 ▼	28 ▼	2015 ▼	03 ▼	01 ▼	2015 ▼	
<input type="button" value="Submit"/> <input type="button" value="Reset"/>							

\*Data Available from August 1st, 2013

Data provided by the Kentucky Mesonet



# Evapotranspiration in Kentucky

- Reference Evapotranspiration according to the FAO Penman-Monteith method.
- Lack of field measurements in Kentucky led to the use of weather data

$$ET_o = \frac{0.408 \Delta (R_n - G) + \gamma \frac{900}{T + 273} u_2 (e_s - e_a)}{\Delta + \gamma (1 + 0.34 u_2)}$$

# Irrigation Manager

## Evapotranspiration Calculation

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County:	From:			To:		
Adair ▼	02 ▼	28 ▼	2015 ▼	03 ▼	01 ▼	2015 ▼
<input type="button" value="Submit"/> <input type="button" value="Reset"/>						

\*Data Available from August 1st, 2013

### Kentucky state map

A program was also created to display the amount of evapotranspiration that occurred over the past day on a statewide level. A graphic of Kentucky with various stations across the state and their corresponding level of evapotranspiration are included. Just select the date below to get the most current day's evapotranspiration estimate.

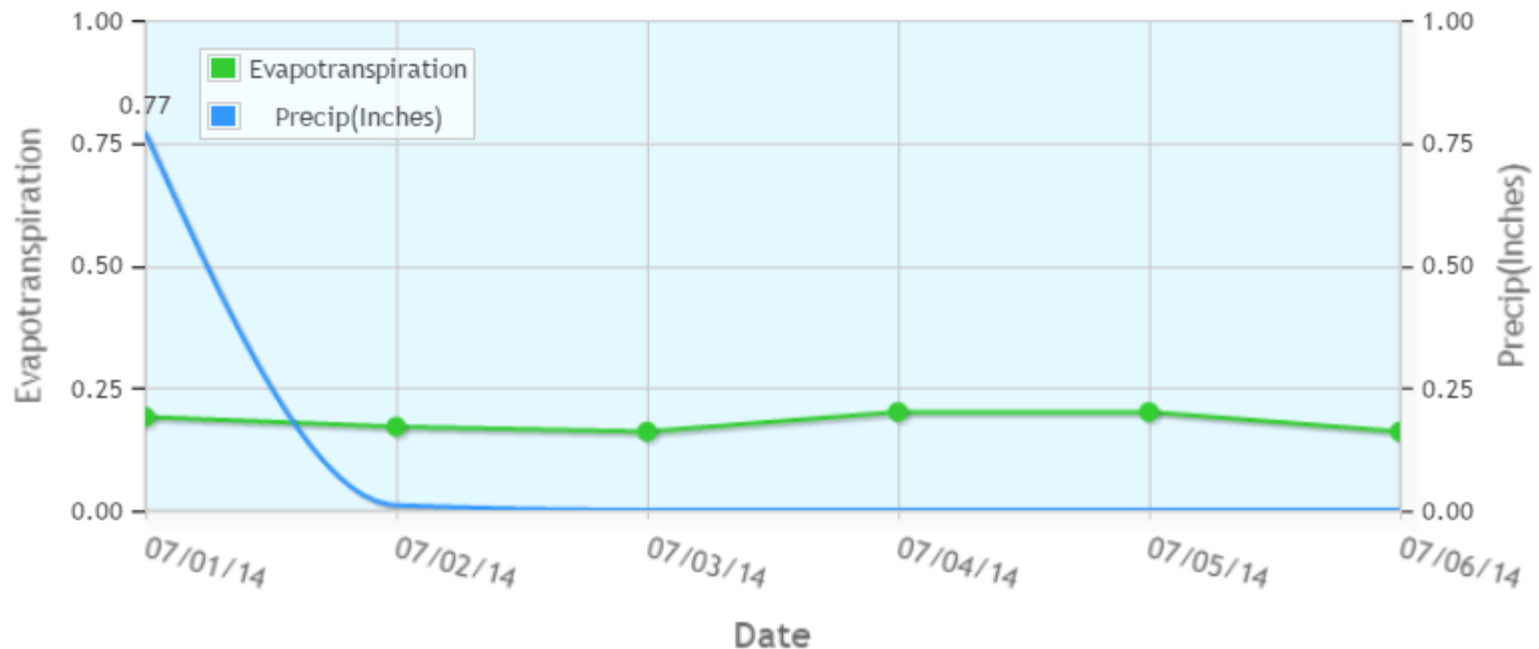
Date:
02 ▼ 28 ▼ 2015 ▼
<input type="button" value="Submit"/> <input type="button" value="Reset"/>

# Irrigation Manager

## Evapotranspiration Calculation for Carroll

07/01/14~07/06/14

Date	ET	Acc ET	Precip	Acc Precip	Water Balance
07/01/14	0.19	0.19	0.77	0.77	0.58
07/02/14	0.17	0.36	0.01	0.78	0.42
07/03/14	0.16	0.52	0.00	0.78	0.26
07/04/14	0.20	0.72	0.00	0.78	0.06
07/05/14	0.20	0.92	0.00	0.78	-0.14
07/06/14	0.16	1.08	0.00	0.78	-0.30





The map displays the following values for each region (from north to south, and west to east):

- North: 0.19, 0.19
- North-West: 0.33, 0.20
- North-East: 0.18, 0.17, 0.18, 0.19
- West: 0.21, 0.20, 0.19, 0.18, 0.17, 0.19, 0.16, 0.20, 0.19, 0.18
- Central: 0.18, 0.19, 0.17, 0.18, 0.17, 0.15, 0.16, 0.17, 0.16, 0.17, 0.16, 0.17, 0.16, 0.17
- East: 0.18, 0.17, 0.18, 0.17, 0.20, 0.18, 0.22

# County Weather Summary (New)

## UK Agricultural Weather Page for Kentucky: Jefferson County

### Nowcast



50F

Dewpoint	41F
Windspeed	2 mph
Humidity	71%
Probability of Precip	3%
Spraying Conditions	Good
Drying Conditions	Fair
Livestock Stress	None

### Daily Forecast Summary

DAY	WED	THU	FRI	SAT	SUN	MON	TUE
<u>TEMP Hi/Low</u>	68 / 47	58 / 51	69 / 44	73 / 51	76 / 54	79 / 59	79 / 59
<u>Rain/Pop(%)</u>	0.01 / 17	0.22 / 53	0 / 14	/ 5	/ 16	/ 16	/ 27
<u>RH(%) Hi/Low</u>	80 / 42	77 / 55	86 / 44	77 / 38	77 / 45	81 / 45	84 / 47
<u>Dew PT Hi/Low</u>	46 / 41	46 / 42	46 / 41	49 / 45	54 / 49	55 / 53	57 / 55
<u>Windspeed Hi/Low</u>	7 / 1	13 / 3	8 / 7	6 / 3	8 / 3	13 / 6	9 / 5
<u>Evapotranspiration</u>	0.13	0.12	0.16	0.16	0.15	0.19	0.16
<u>GDD/Acc GDD</u>	9 / 289	5 / 294	10 / 303	12 / 315	15 / 330	19 / 349	19 / 368

\*GDD-Growing Degree Days. Acc.GDD-Accumulated from Apr.1 to date.

### Medium & Long Range Outlook for Kentucky

	6 TO 10 DAY MAY 4-MAY 8	8 TO 14 DAY MAY 6-MAY 12	30 DAY MAY	90 DAY MAY-JUL
Temperature:	Above	Above	Normal	Normal
Precipitation:	Above	Above	Normal	Normal

# County Weather Summary (New)

Weather Summary Table (Station: BOWLING GREEN 4E)

Last n Days	Temperature						Precipitation			Extreme Temp		ET	Water Balance
	Max	Dev	Min	Dev	Ave	Dev	Total	Dev	%Norm	Hi	Lo		
<u>1</u>	67	-5	42	-6	54	-6	0.00	-0.14	0	67	42	0.00	0
<u>7</u>	66	-5	44	-4	55	-4	0.54	-0.44	55	72	32	0.80	-0.26
<u>14</u>	68	-2	50	3	59	1	5.86	3.99	313	80	32	1.53	4.33
<u>30</u>	71	4	48	4	60	4	9.25	5.08	222	84	20	3.43	5.82
<u>90</u>	56	-2	35	-1	46	-1	21.16	8.15	163	84	-9	-	-
<u>180</u>	52	-2	34	0	43	-1	27.87	1.52	106	84	-9	-	-
<u>360</u>	67	-1	47	1	57	0	52.68	2.28	105	96	-9	-	-

Degree Days Table

Growing Degree Days			Corn Growing Degree Days			Insect Degree Days			
Start Date	GDD	Dev	Start Date	Corn GDD	Dev	Insect	ADD	Insect	ADD
<u>Count from Jan 1</u>	343	111	<u>Planting Apr 1</u>	318	-72	<u>Alfalfa Weevil</u>	522	<u>European Corn Borer</u>	438
<u>Count from Apr 1</u>	265	33	<u>Planting May 1</u>	0	0	<u>Oriental Fruit Moth</u>	665	<u>San Jose Scale</u>	399

# Much More

UNIVERSITY OF KENTUCKY

College of Agriculture, Food and Environment

Previous Webpage

Zipcode or County, State

AgWeatherForecast

Ag Weather Synopsis

Tweets

Follow

UK Ag Weather Center

@UKAGweather

4h

Short Dry Period Then Active Weather Pattern Begins...

weather.uky.edu/ky/forecas

UK Ag Weather Center

@UKAGweather

1 Dec

Wet Spell Continues; Freezing Rain Advisory For Far West...

weather.uky.edu/ky/forecas

UK Ag Weather Center

@UKAGweather

30 Nov

Wet Spell Ahead; Turning Colder Monday...

weather.uky.edu/ky/forecas

Like

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US County Forecast

Severe Weather

UK Ag WEATHER CENTER

Home

Current Weather

Forecast

Climate

Ag Models

Ag Review

Data

Radar/Maps

KyMesonet

Mobile

Point Ag Forecast

Kentucky Forecast

EDEN Next 48

Rainfall At Your Farm

Disease/Insect Models

Irrigation Manager

Ag Weather Observ

12/02/14

Temp Hi

Temp Lo

DT Hi

DT Lo

RH Hi

RH Lo

Rain

12/03/14

Temp Hi

Temp Lo

DT Hi

DT Lo

RH Hi

RH Lo

Rain

12/04/14

Temp Hi

Temp Lo

DT Hi

DT Lo

RH Hi

RH Lo

Rain

12/05/14

Temp Hi

Temp Lo

DT Hi

DT Lo

RH Hi

RH Lo

Rain

12/06/14

Temp Hi

Temp Lo

DT Hi

DT Lo

RH Hi

RH Lo

Rain

Mouse over Date-Menu for 5-Day NWS Forecasts.

Click Number on Map for County Ag. Forecast.

Daily Highest Temp(°F)

12/02/14 Tuesday

Lexington

Paducah

Owensboro

Hopkinsville

Elizabethtown

Bowling Green

Louisville

Covington

Frankfort

Georgetown

Richmond

Jackson

Hazard

Pikeville

Nowcast

43°F

Dewpoint

38F

Windspeed

5 mph

Humidity

83%

Probability of Precip

30%

Surviving Conditions

Good

Drying Conditions

Good

Livestock Stress

None


Daily Summary for Lexington

DAY	TUE	WED	THU	FRI	SAT	SUN	MON
TEMP Hi/Low	44 / 34	50 / 40	44 / 33	54 / 38	52 / 45	48 / 40	50 / 40
Rain/Pop(%)	0.13 / 98	0.04 / 28	0.06 / 34	/ 59	/ 67	/ 21	/ 21
RH(%) Hi / Low	100 / 82	100 / 68	80 / 62	92 / 80	97 / 82	80 / 68	80 / 68
Dew PT Hi/Low	41 / 33	41 / 35	34 / 29	48 / 37	47 / 42	39 / 37	40 / 37
Windspeed Hi/Low	9 / 6	12 / 5	7 / 6	6 / 5	8 / 6	6 / 5	7 / 3
Evapotranspiration	0.02	0.04	0.03	0.03	0.03	0.03	0.03
GDD/Acc GDD	0 / 3773	0 / 3773	0 / 3773	2 / 3775	1 / 3776	0 / 3776	0 / 3776

\*GDD-Growing Degree Days. Acc.GDD-Accumulated from Apr.1 to date.



# Current Weather

Thursday February 26, 2015 1000 PM EST	SKY COND	TEMP (° F)	DEW POINT (° F)	RH (%)	WIND CHILL (° F)	WIND DIRECTION	WIND SPEED (mph)	BAR PRES (in)	SPRAYING CONDITIONS
PADUCAH		22	14	71	10	North	S: 12 G: --	30.41↑	Favorable

## KY City Nowcast

## Current KY Conditions

## Current US Conditions

## Soil Temps/Moisture

## Drought Review

## Radar Images

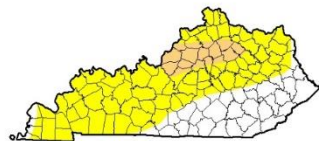
## Satellite Images

## Frost/Freeze Information

### U.S. Drought Monitor Kentucky

February 24, 2015  
(Released Thursday, Feb. 26, 2015)  
Valid 7 a.m. EST

	None	D0-D4	D0-D4	D0-D4	D0-D4	D4
Current	35.81	69.38	0.00	0.00	0.00	0.00
Last Week	14.19	85.81	0.00	0.00	0.00	0.00
3 Months Ago	100.00	0.00	0.00	0.00	0.00	0.00
Start of Calendar Year	85.81	14.19	0.00	0.00	0.00	0.00
Start of Water Year	85.81	14.19	0.00	0.00	0.00	0.00
One Year Ago	100.00	0.00	0.00	0.00	0.00	0.00



**Intensity**  
 D0 Abnormally Dry  
 D1 Moderate Drought  
 D2 Severe Drought  
 D3 Extreme Drought  
 D4 Exceptional Drought

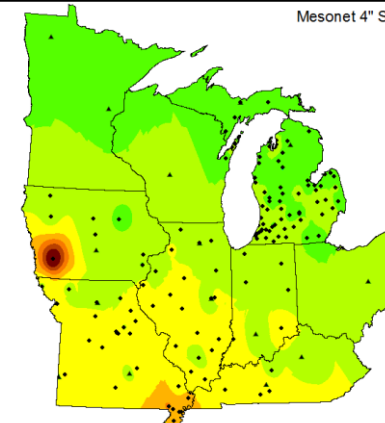
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for more details.

Author:  
Richard Higgins  
NCEM/NOAA



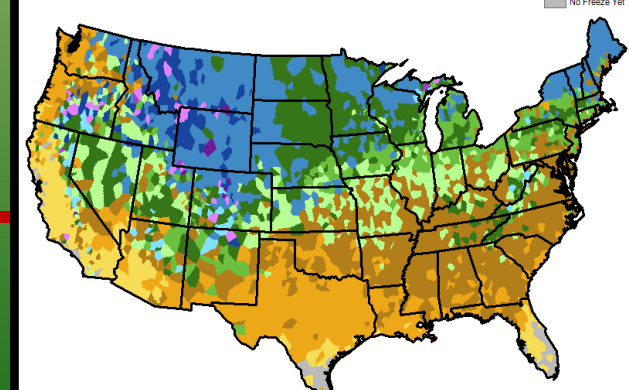
<http://droughtmonitor.unl.edu/>

### Mesonet 4" Soil Temperature (°F) 24-Hour Period Through 9/24/2014



### Date of First 32°F Freeze since 8/1

As of 2/26/2015



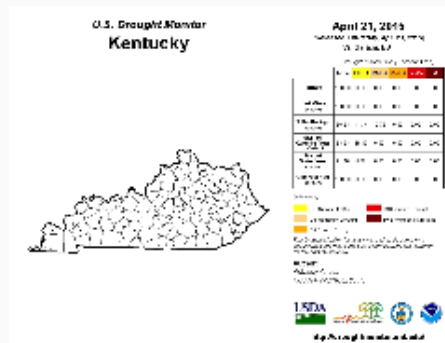
MRCC Experimental Freeze Guidance:  
These experimental maps may be utilized as a guide to local and regional freeze conditions but should NOT be used by themselves for decision processes.



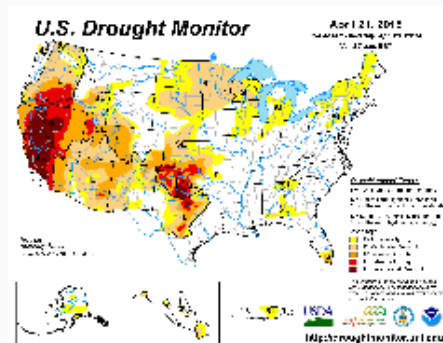
# Drought Review

The images below are provided by the National Drought Mitigation Center in Lincoln, Nebraska and the Climate Prediction Center. Each image is an interpretation of the current drought's magnitude, spatial scale, and associative outlooks and impacts on crops. At the bottom of the page is a graph displaying the categorical percentage of drought across the Commonwealth at any point over the past year.

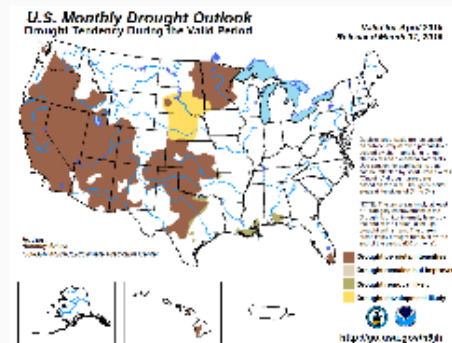
Click images to zoom....



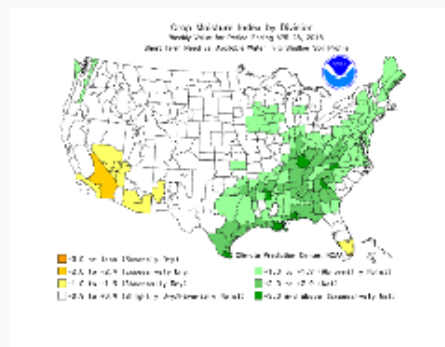
**Kentucky Drought Monitor**



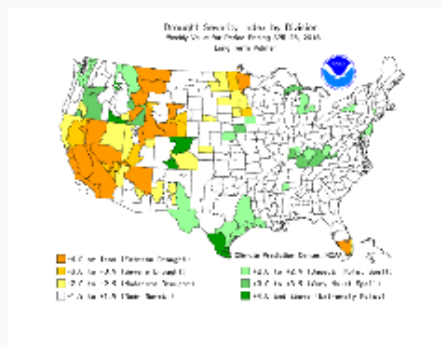
**National Drought Monitor**



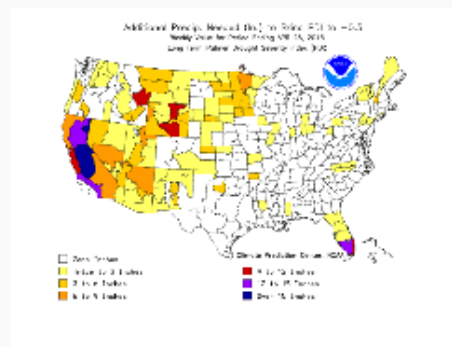
**National Drought Outlook**



**Crop Moisture Index**



**Palmer Drought Index**



**Precipitation Needed**

# Forecast

Point Ag Forecast

Kentucky Forecast

Precipitation Totals

Livestock Heat Stress

County  
Forecasts

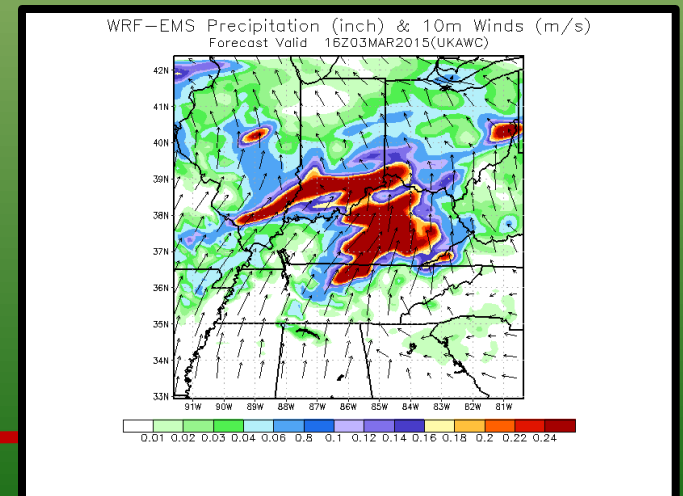
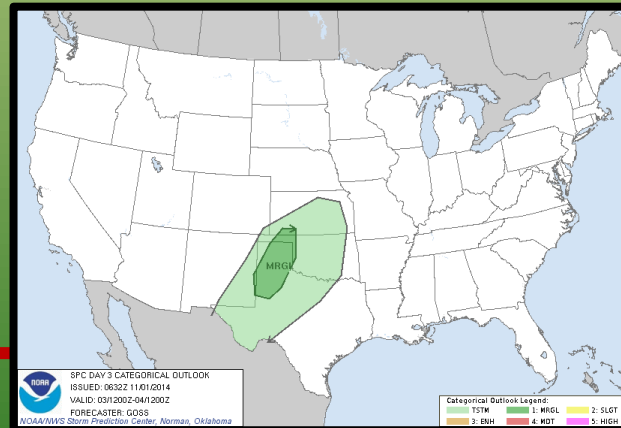
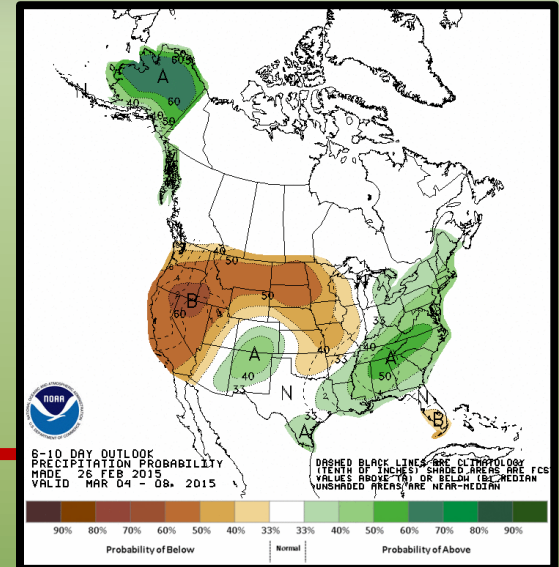
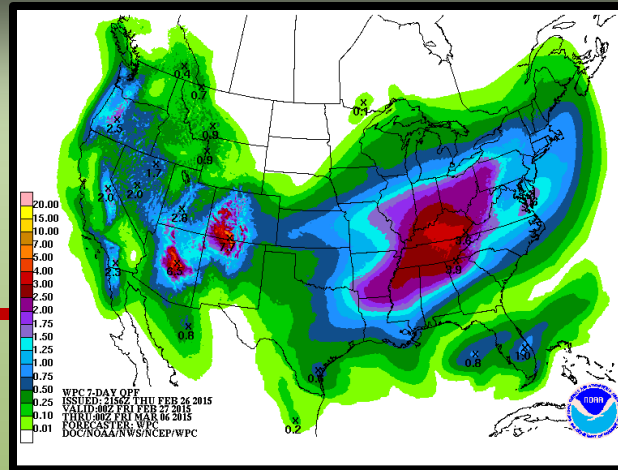
EDEN Next 48

Long Range  
Outlooks

Drought Outlooks

Severe Weather  
Outlooks

Meteorology/Research



# Climate

Well Below Normal Temperatures and Much Above Normal Precipitation:

It was an all-around, recording breaking week for the Lower Ohio Valley. The period started off with a major winter storm pushing through the area on Monday. Significant accumulations were seen across the entirety of the state with 8 to 12 inches common. Snowfall was moderate to heavy at times with rates in the vicinity of 1 to 2 inches per hour. Another cold front then dropped across the region Tuesday night and into Wednesday morning, dropping another 1 to 2 inches. Following the snow, dangerously cold air built into the Ohio Valley. The coldest period was Wednesday night through Thursday night with the mercury pushing well below zero. Most fell between -5 and -15 on Wednesday night, before only rising into the single digits on Thursday. Much of the Bluegrass and Eastern Kentucky then dropped to between -10 and -20 on Thursday night with Arctic high pressure shifting overhead. Some dropped even further. The state record for low temperatures was set back in January of 1994 with a reading of -37 degrees. Richmond got close with a low temperature of -32 on Thursday night. Records were broken in Lexington, Louisville, Bowling Green, and Frankfort that spanned back over 100 years, into the late 1800s.

Kentucky Mesonet

Rainfall @ Your Farm

Weekly Summary

Monthly Summary

Division Climate Summary

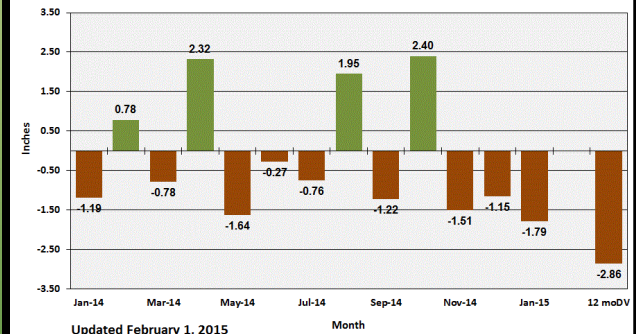
KY Summaries & Maps

Frost/Freeze Normals

Kentucky Normals

CoCoRaHS

**Kentucky Monthly Precipitation Departures  
January 2014 - January 2015**  
UKAWC



**Western**

LAST n DAYS	1	3	7	14	21	30	60	90	120	180	360
AVE TEMP	27	24	24	20	26	29	31	35	36	46	56
DEPART.	-17	-20	-19	-21	-14	-10	-6	-2	-4	-2	-2
PRECIP	0.00	0.00	0.00	3.11	3.11	3.87	6.18	8.80	10.92	17.15	41.99
DEPART.	-0.16	-0.48	-1.10	0.98	-0.02	-0.46	-1.96	-4.09	-6.49	-7.17	-8.48
%NORM	0	0	0	146	99	89	76	68	63	71	83

Station Name

Threshold (F°)

Spring (Date)

Probability Level

Earliest	90	50	10	Latest
Apr11	Apr19	May08	May27	Jul02
Apr10	Apr11	May02	May21	Jun10
Mar25	Apr07	Apr15	May14	May25

Ashland

36  
32  
28



# Ag Review

## Kentucky Climate Summary For the Period June 16, 2014 to June 22, 2014

Above Normal Temperatures and Below Normal Rainfall:

The summer season started in full force this past period with warm and humid conditions in place. The majority of the week was controlled by above normal temperatures with highs getting into the upper 80s to low 90s each day. A moist atmosphere with dew points in the upper 60s to low 70s helped push the heat index into the mid 90s to around 100 at times. This sent the livestock heat stress index into the danger category about each day during the afternoons. High humidity helped push the heat index into the danger category about each day during the afternoons. This feature then broke down the period. The overall dry nature of the past five weeks.

Rainfall At Your Farm

Kentucky Crop Report

Weather Stats for Crop Report

Ag Weather Observer

Drought Review

### SOIL MOISTURE for week ending 06/22/14

	Very Short	Short	Adequate	Surplus
	Percent	Percent	Percent	Percent
Topsoil	4	20	66	10
Subsoil	3	18	72	7

- Represents zero.

### CROP PROGRESS for week ending 06/22/14

Crop Stage	This Week	Last Week	Last Year	5-Yr Avg
	Percent	Percent	Percent	Percent
Soybeans Planted	80	70	75	84
Soybeans Emerged	72	58	58	75
Tobacco Set	90	81	89	92
Winter Wheat Coloring	98	89	-	-
Winter Wheat Mature	81	40	-	-
Winter Wheat Harvested	35	5	26	50

- Represents data not available.

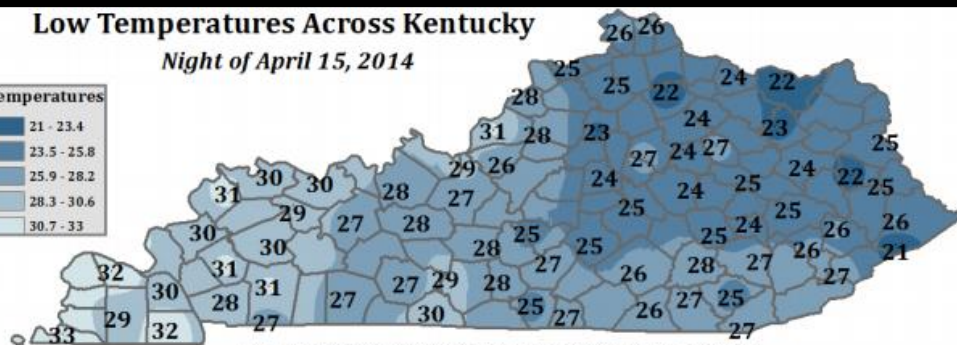
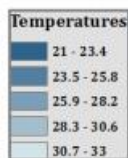
### CROP CONDITIONS for week ending 06/22/14

Crop	Very Poor	Poor	Fair	Good	Excellent
	Percent	Percent	Percent	Percent	Percent
Corn	1	3	17	57	22
Pasture	1	7	27	52	13
Soybeans	1	3	18	62	16
Tobacco Set	1	3	17	66	13
Wheat	2	6	22	53	17

- Represents zero.

## Low Temperatures Across Kentucky

Night of April 15, 2014



\* Data collection from National Weather Service and Kentucky Mesonet Stations

# Data

STATION	Date	TMax	TMin	Prec
Shelbyville 10W	02/ 26/ 2015	31	21	0.00
Shelbyville 10W	02/ 27/ 2015	23	9	0.00
Shelbyville 10W	02/ 28/ 2015	33	15	0.00

KY AM Daily Data

KY PM Daily Data

KY Climate Data

Historical Data

Soil Temps/Moisture

Spindletop Farm Data

Daily Database
Observations Analysis
Monthly Climate Summary
Threshold Search
Graphics for Climate Data

### Kentucky Climate Data Threshold Search

With this form you can request a listing of daily climate reports from a number of sites within Kentucky, as well as a few sites from both states for particular values for weather variables. Simply fill out the desired parameters then press the "Submit Choices" button.

Station:

For Years:  To  Within The Months Of:  To

Search Criteria:  Value For Search Criteria:

Note: Enter Precipitation values for search criteria as whole numbers, e.g. 1.50 as 150

Output Preference:

☒ Dates  
☐ Counts

Output Destination:

☒ Screen  
☐ Make Graph

Kentucky Monthly Climate Division Data (1895 to Present)				
1895-Present Monthly Rainfall	West (CD-1), Graph	Central (CD-2), Graph	Bluegrass (CD-3), Graph	East (CD-4), Graph
1895-Present Monthly Temperature	West (CD-1), Graph	Central (CD-2), Graph	Bluegrass (CD-3), Graph	East (CD-4), Graph

# Kentucky Climate Data

- Data available between 1971 and the Present
- 29 Stations within Kentucky, as well as a few from bordering states
- Daily, Monthly, and Hourly Information Available

## Louisville Climate Data

This weather data provided by the University of Kentucky  
Agricultural Weather Center (Phone (859)257-3000 Ext245)  
World Wide Web URL: <http://www.wagwx.ca.uky.edu/>

STATION	DATE	AIR TEMP			PRECIP	RH		SOIL TEMP				EVAP
		MX	MN	AV		MX	MN	GRASS	BARE	MX	MN	
Louisville	04-01-2015	70	43	56		73	24	56	50			
Louisville	04-02-2015	75	54	64	0.99	93	34	57	53			
Louisville	04-03-2015	70	53	61	5.82	96	68	59	53			
Louisville	04-04-2015	58	38	48		80	30	60	53			
Louisville	04-05-2015	66	36	51								
Louisville	04-06-2015	73	52	62	0.01							
Louisville	04-07-2015	78	60	69	1.21							
Louisville	04-08-2015	82	59	70	0.14							
Louisville	04-09-2015	84	67	75	0.33							
Louisville	04-10-2015	84	55	69	0.45							

## Lexington Monthly Climate Data

This data provided by the University of Kentucky  
Agricultural Weather Center (Phone (859)257-3000 ext.245)  
World Wide Web URL: <http://www.wagwx.ca.uky.edu/>

Lexington Monthly Climate Data(04-2015 to 04-2015)

----- AIR TEMPERATURE -----										-- SOD --	
		AVERAGE			EXTREME		AVG DEPART	NO. OF DAYS		4" TEMP	
YEAR	MONTH	MAX	MIN	AVG	MAX	MIN	FROM NORM	>=90	<=32	MAX	MIN
2015	Apr	67	48	58	82	31	+3	0	1	59	58

----- PRECIPITATION -----											
		DEPARTURE		CUMULATIVE		GREATEST		% RAIN		NO. DAYS	
YEAR	MONTH	TOTAL	NORMAL	TOTAL	DEPARTURE	TOTAL	24 HOUR	DAYS	>=.01		
2015	Apr	11.22	+7.34	11.22	+7.34	5.22		43	13		

# Kentucky PM Daily Data

- Takes into account National Weather Service 1<sup>st</sup> Order (maintained by NWS or Federal Aviation Administration) and Kentucky Mesonet Stations (Total of 95).
- Daily data is constructed based on the observations found between 7 PM on the day before the date in question and 7 PM of the current day.
- Daily data only, going back to 2007

## *The KY Allsites PM Daily Database*

**Data for LOUISVILLE APT: 04/15/2015 thru 04/28/2015**

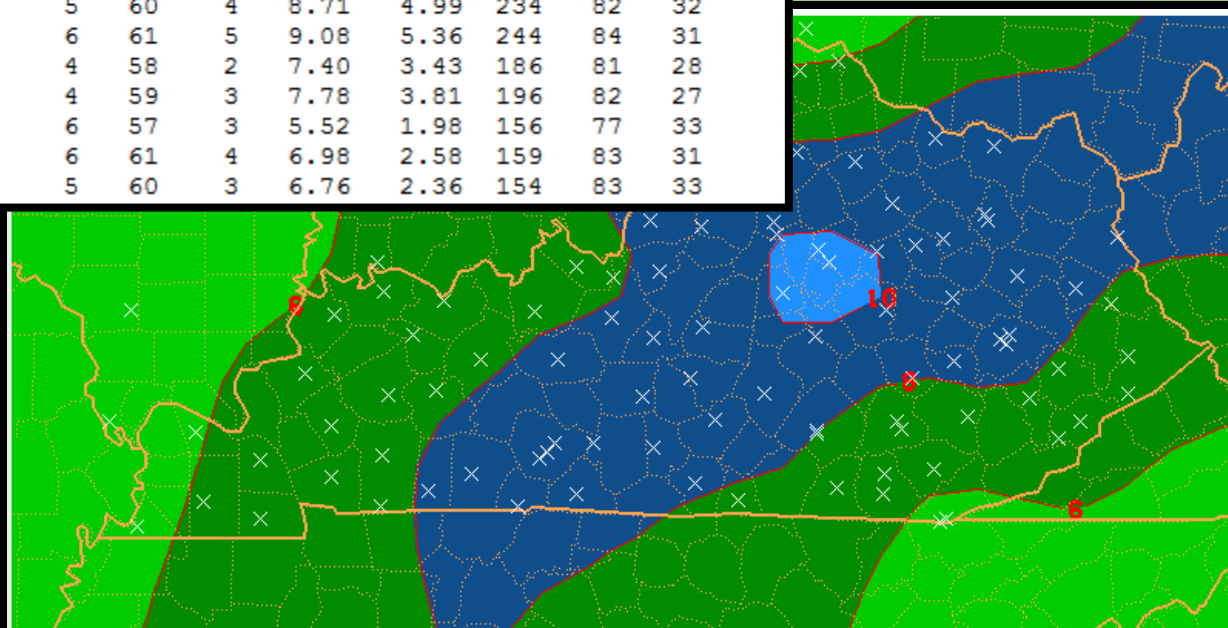
STATION	Date	TMax	TMin	Prec	Type	AEflag
Louisville Apt	04/ 15/ 2015	62	57	-1.00	N	A
Louisville Apt	04/ 16/ 2015	76	58	0.15	N	A
Louisville Apt	04/ 17/ 2015	78	64	0.00	N	A
Louisville Apt	04/ 18/ 2015	81	56	0.00	N	A
Louisville Apt	04/ 19/ 2015	73	60	0.78	N	A
Louisville Apt	04/ 20/ 2015	63	56	0.17	N	A
Louisville Apt	04/ 21/ 2015	68	46	0.00	N	A
Louisville Apt	04/ 22/ 2015	61	48	0.02	N	A
Louisville Apt	04/ 23/ 2015	63	39	0.00	N	A
Louisville Apt	04/ 24/ 2015	65	38	0.00	N	A
Louisville Apt	04/ 25/ 2015	57	51	0.18	N	A
Louisville Apt	04/ 26/ 2015	65	46	0.04	N	A
Louisville Apt	04/ 27/ 2015	68	42	0.00	N	A



# Kentucky Climate Summaries

Summarized and averaged data for the period 20150401 to 20150427 (Last 27 Days)  
(Not for Legal purposes. Departure from Norms based on climate divisional Averages)

STATION	AIR TEMPERATURE						PRECIPITATION			ExtremeTemp	
	MAX	DEV	MIN	DEV	AVR	DEV	TOTAL	DEV	%NORM	HI	LO
ALBANY 1N	70	3	50	6	60	4	6.38	2.41	161	82	30
ALEXANDRIA 5NW	66	1	47	5	56	2	5.60	2.06	158	79	33
BARBOURVILLE 3E	70	2	47	7	59	5	7.21	3.39	189	84	27
BENTON 4N	70	1	52	7	61	4	7.03	2.63	160	83	35
BIG SANDY	69	1	50	10	59	5	6.88	3.25	190	84	35
BLACK MOUNTAIN ARC	65	-4	45	5	55	0	7.18	3.15	178	81	27
BOONEVILLE 2S	70	2	46	6	58	4	8.17	4.54	225	87	27
BOWLING GREEN 4E	71	3	50	5	61	5	9.21	5.49	248	84	31
BOWLING GREEN 5S	70	2	50	5	60	4	8.71	4.99	234	82	32
BOWLING GREEN APT	72	4	51	6	61	5	9.08	5.36	244	84	31
BRANDENBURG 4SW	68	1	48	4	58	2	7.40	3.43	186	81	28
BURKESVILLE 3W	71	4	48	4	59	3	7.78	3.81	196	82	27
BURLINGTON 4S	65	0	48	6	57	3	5.52	1.98	156	77	33
CADIZ 4SW	71	2	51	6	61	4	6.98	2.58	159	83	31
CALHOUN 5NW	70	1	50	5	60	3	6.76	2.36	154	83	33



04/28/15 - Past 27 Days Precipitation Total (Inches)  
Ending 7 PM



# Kentucky AM Daily Data

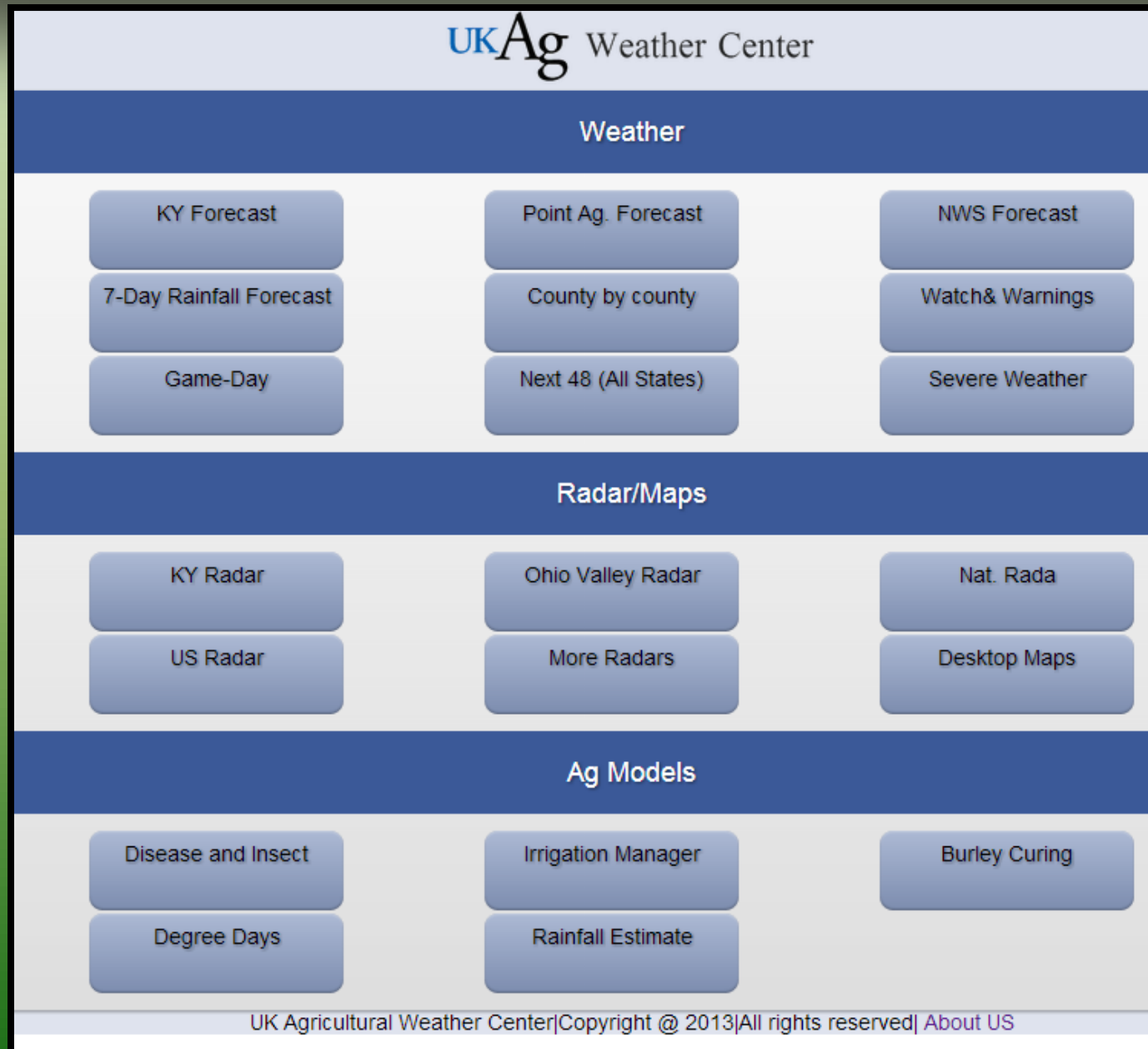
- Most extensive database with 168 Stations (Also includes COOP stations)
- Daily data is constructed based on the observations found between 7 AM on the day of concern and 7 AM the following day.
- Daily data only, going back to 2007

## *The KY Allsites AM Daily Database*

**Data for NWS JACKSON: 04/14/2015 thru 04/28/2015**

STATION	Date	TMax	TMin	Prec	Type	AEflag
NWS JACKSON	04/ 14/ 2015	81	59	0.91	N	A
NWS JACKSON	04/ 15/ 2015	59	50	1.38	N	A
NWS JACKSON	04/ 16/ 2015	60	50	0.09	N	A
NWS JACKSON	04/ 17/ 2015	68	54	0.40	N	A
NWS JACKSON	04/ 18/ 2015	76	58	-1.00	N	A
NWS JACKSON	04/ 19/ 2015	82	59	-1.00	N	A
NWS JACKSON	04/ 20/ 2015	69	58	0.30	N	A
NWS JACKSON	04/ 21/ 2015	71	44	0.04	N	A
NWS JACKSON	04/ 22/ 2015	63	46	0.08	N	A
NWS JACKSON	04/ 23/ 2015	63	36	0.01	N	A
NWS JACKSON	04/ 24/ 2015	60	38	0.00	N	A
NWS JACKSON	04/ 25/ 2015	64	40	0.02	N	A
NWS JACKSON	04/ 26/ 2015	71	43	0.55	N	A
NWS JACKSON	04/ 27/ 2015	64	41	0.00	N	E
NWS JACKSON	04/ 28/ 2015	62	39	0.00	N	A

# Mobile Pages



# Questions?

## **Matt Dixon**

Meteorologist  
UK Ag Weather Center

*Department of Biosystems and Agricultural  
Engineering*

*UK, Lexington, Kentucky*

[mdi227@uky.edu](mailto:mdi227@uky.edu)

(859) 218-4363

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## **Tom Priddy**

Director/Extension Meteorology Specialist

[priddy@uky.edu](mailto:priddy@uky.edu)

(859) 218-4364

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## **Dr. Wanhong Wang**

Programmer/Systems Administrator

[wwang@uky.edu](mailto:wwang@uky.edu)

(859) 218-4365



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