



Purdue Cooperative Extension Service
USDA-NIFA Extension IPM Grant

August 2, 2013 - Issue 18

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Insects, Mites, And Nematodes

Soybean Aphid Activity Picking Up - (*Christian Krupke and John Obermeyer*)

- Numbers vary considerably from field to field.
- Cooler temperatures favoring aphid development.
- Treatment threshold and application guidelines given below.

Because of the tremendous variability in aphid numbers from field to field, diligent scouting NOW can pay big dividends. The following is a quick scouting review.

Sampling: Count aphids, primarily on the undersides of leaves, on at least 20 plants (the more, the better) in various areas of the field. When aphids are just beginning to colonize soybean plants, they will be concentrated on the most active growing points – the newest unrolled leaves and the developing pods.

Aphid Number: Should you find an average of 250 or more aphids/plant during the early soybean reproductive stages (R1-R4), a treatment is justified. Refer to the following treatment guide. The established threshold of ≥ 250 aphids/

plant includes a buffer time of about a week to get the field sprayed. In other words, damage is not occurring at 250 aphids/plant. During the seed-fill stages (R5-R6), treatment is not as clear-cut. If aphid numbers are increasing and plants are under stress a treatment is justified. This usually occurs when dry soil conditions are prevalent. Do NOT treat soybean beyond the R6 stage of growth – there is no advantage in terms yield preservation!

Weather: The temperatures (upper 70's to low 80's) we are experiencing are optimal for aphid development and reproduction. Rainfall, including some hard downpours, will have some negative effect on aphid populations, but does not wipe them out.

Predators: Most pest managers calling to report aphid numbers are also aware of predator populations (mostly Asian lady beetles). We appreciate their desire to preserve natural enemies and prevent unwarranted pesticide treatments. However, once aphid levels reach over 100 per plant, predators may not be able to keep ahead of the aphid's reproductive capability.

Soybean aphid treatment threshold guide.

<p>Growth Stage (upper 4 nodes)</p>	<p>R1, R2 Bloom</p>	<p>R3 Pod Set</p> <p>R3 = 3'16" long pod</p>	<p>R4 Pod Growth</p> <p>R4 = 3'4" long pod</p>	<p>R5 Seed Fill</p>	<p>R6 Full Seed</p>	<p>R7, R8 Maturity</p>
	<p>Aphid #/plant</p>	< 250	≥ 250	> 250	> 250	Not Necessary
<p>Action</p>	Resample Later	Treatment is advised	Treat if aphids are increasing	Treat only if plants under drought stress	Do Not Treat	



Treatment: Should control be necessary, complete coverage on the foliage seems to be the key. Ground driven rigs applying at least 20 gallons per acre with 40 PSI with fine droplets will help penetrate the canopy. Finer droplets are desirable when spraying any insecticide on soybeans, and ground application is usually a better approach for canopy penetration. Aerial application success is dependent on finished spray volume (we recommend 5 gallon/acre) and air movement into the canopy.

Products labeled for soybean aphid control can be viewed by clicking [HERE](http://extension.entm.purdue.edu/publications/E-77.pdf) <<http://extension.entm.purdue.edu/publications/E-77.pdf>>



2013 Corn Earworm Trap Report

Click here for recent catch information



Black Light Trap Catch Report - (John Obermeyer)

County/Cooperator	7/16/13 - 7/22/13						7/23/13 - 7/29/13					
	VC	BCW	ECB	WBC	FAW	AW	VC	BCW	ECB	WBC	FAW	AW
Dubois/SIPAC Ag Center							0	0	0	0	0	0
Jennings/SEPAC Ag Center	0	0	0	0	0	0	0	0	0	0	0	0
Knox/SWPAC Ag Center	0	2	0	0	0	1	0	1	0	0	0	0
LaPorte/Pinney Ag Center	0	0	0	11	0	1						
Lawrence/Feldun Ag Center	0	0	0	0	0	0	0	0	0	0	0	0
Randolph/Davis Ag Center	0	0	0	0	0	2	0	0	0	0	0	0
Tippecanoe/TPAC Ag Center	0	0	0	0	0	2	0	1	0	0	0	0
Whitley/NEPAC Ag Center	0	0	0	1	0	3	0	2	0	0	0	7

VC = Variegated Cutworm, BCW = Black Cutworm, ECB = European Corn Borer, WBC = Western Bean Cutworm, FAW = Fall Armyworm, AW = Armyworm

Western Bean Cutworm Adult Pheromone Trap Report

**Week 1 = 6/20/13 - 6/26/13, Week 2 = 6/27/13 - 7/3/13, Week 3 = 7/4/13 - 7/10/13, Week 4 = 7/11/13 - 7/17/13,
Week 5 = 7/18/13 - 7/24/13, Week 6 = 7/25/13 - 7/31/13**

County	Cooperator	WBC Trapped							
		Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Adams	Kaminsky/New Era Ag - Monroe	0	1	0	2	2			
Adams	Roe/Mercer Landmark - Pleasant Mills	0	0	0	1	0	0		
Allen	Anderson/Syngenta - Churubusco	0	3	14	29	34	7		
Allen	Gynn/Southwind Farms - Ft. Wayne	0	0	6	11		2		
Benton	Lakin/Speciality Hybrids - Fowler	4	5	0	38	21	4		
Boone	Neal Campbell/Beck's Hybrids	0	0	0	0	0	0		
Boone	Dennis Carrell/Lamb Farms - Lebanon	0	1	0	0	0	1		
Carroll	Lakin/Speciality Hybrids - Delphi	1	1	1	0	0	0		
Cass	Lakin/Speciality Hybrids - Royal Center	2	42	144	165	115	51		
Clay	Bower/Ceres Solutions - Brazil	0	0	0	0	0			
Clay	Bower/Ceres Solutions - Clay City		0		0	0			
Clinton	Foster/Purdue Entomology - Rossville	0	0	1	4	2			
DeKalb	Hoffman/ATA Solutions	0	0	7	61	18	5		
DuBois	Eck/Purdue CES - Jasper	0	0	0	0	0	0		
Fayette	Schelle/Falmouth Farm Supply - Falmouth	0	0	0	0	1	0		
Fountain	Mroczkiewicz/Syngenta - Rob Roy	0	0	3	31	1	0		
Fulton	Jenkins/North Central Co-op - Kewanna	7	8	388	255	402	28		
Fulton	Jenkins/North Central Co-op - Rochester	5	26	209	192	413	15		
Hamilton	Campbell/Beck's Hybrids	0	0	0	1	0	0		
Hendricks	Nicholson/Nicholson Consulting	0	0	0	1	0			
Henry	Schelle/Falmouth Farm Supply	0	0	0	0	0	0		
Jasper	Lakin/Speciality Hybrids - Fair Oaks	4	28	47	119	139	104		
Jasper	Overstreet/Purdue CES - Wheatfield	0	2	2	48	152	106		
Jasper	Ritter/Brodbeck Seeds	1	0	33	34	88			
Jay	Shrack/Ran Del Agri Svc	0	0	0	2	0	1		
Jennings	Bauerle/SEPAC - North Vernon	0	0	0	0	1	0		
Knox	Bower/Ceres Solutions - Vincennes		0	0	0	0			
Knox	Bower/Ceres Solutions - Westphalia	0		0	0	0			
Knox	Hoke/SWPAC - Vincennes N	0	0	0	0	12	4		
Lake	Kleine/Kleine Farms - Cedar Lake	2	3	4	14	57	30		
Lake	Moyer - Shelby	2	4	6	86	110	31		
Lake	Moyer - Schneider	6	16	37	243	646	87		
Lake	Rocke/Agri Mgmt Solutions - Hobart	0	1	9	16	53			
LaPorte	Barry/Kingsbury Elevator	1	0	18	7	10	0		
LaPorte	Rocke/Agri Mgmt Solutions - Wanatah	1	4	8	75	128	65		
Miami	Early/Pioneer	0	0	51	48	52	42		
Newton	Lakin/Speciality Hybrids - Goodland	9	28	7	68	46	8		
Newton	Moyer - Lake Village	6	13	74	273	1194	173		

County	Cooperator	WBC Trapped							
		Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Porter	Lakin/Speciality Hybrids - Hebron	1	1	16	152	100	9		
Porter	Leuck/PPAC - Wanatah N	2	0	1	17	33	0		
Pulaski	Lakin/Speciality Hybrids - Winamac	0	16	119	99	196	58		
Pulaski	Rocke/Agri Mgmt Solutions - Francesville	1	4	42	132		94		
Putnam	Nicholson/Nicholson Consulting - Greencastle	0	0	1	1	0	0		
Randolph	Boyer/DPAC - Farmland	0	1	2	3	0	0		
Rush	Schelle/Falmouth Farm Supply	0	0	0	0	0	0		
Starke	Wickert/Wickert Agronomy Services	0	1	18	29	65	9		
Sullivan	Bower/Ceres Solutions - Sullivan E	0	0	1	0	4			
Sullivan	Bower/Ceres Solutions - New Lebanon	0	0	2	1	3			
Sullivan	Bower/Ceres Solutions - Farmersburg	0	0	0	0	0			
Tippecanoe	Bower/Ceres Solutions - Lafayette	4	34	32	18	0			
Tippecanoe	Nagel/Ceres Solutions - Otterbein	1	0	2	13	14	0		
Tippecanoe	Obermeyer/Purdue Entomology - Agry Farm	0	0	0	1	0	0		
Tippecanoe	Westerfeld/Monsanto	4	4	1	8	11	2		
White	Lakin/Speciality Hybrids - Monon	13	20	57	55	134	11		
White	Lakin/Speciality Hybrids - Monticello	3	49	101	70	94	25		
Whitley	Walker/NEPAC - Columbia City	4	1	4	39	20	8		

Agronomy Tips

When Will My Corn Crop Mature? – (Bob Nielsen) -

- Simplest way to estimate? Add 62 days to the date your crop was pollinating.
- More complicated, but not necessarily more accurate? Base estimate on GDDs from silking to black layer.

Planting of Indiana's corn crop certainly got off to a late start, but finished strong once it did begin (Fig. 1). Nevertheless, half of the state's crop was planted after mid-May (Fig. 1) which positions the 2013 planting season among the latest in recent years (Fig. 2). The lateness of the crop planting was accentuated by our collective short-term memories of the extreme early pace of corn planting in 2012 (Fig. 2).

As most everyone is aware, the calendar pace of corn development is strongly driven by temperature. The warmer it is, the faster the calendar pace of development and vice versa. The conceptual measure of the accumulation of "heat" is defined by the calculation of Growing Degree Days, abbreviated as GDDs (Nielsen, 2012).

From May 1 through the end of July, statewide accumulation of GDDs in Indiana ranged from slightly below normal in the southwest to slightly above normal in

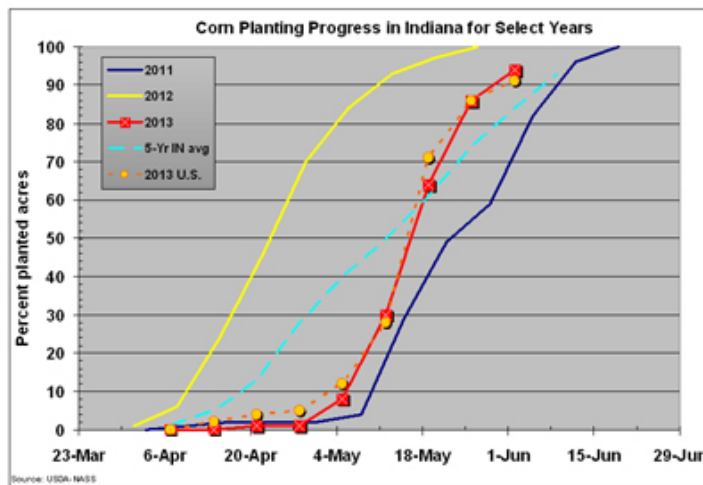


Figure 1. Statewide planting progress in Indiana, select years.

the northwest (Fig. 3). On the one hand, it would have been nice if GDD accumulation had been quite a bit above normal because that would have helped later-planted crops "catch up" calendar-wise. On the other hand, we can be thankful that the season to date has not been significantly cooler than normal or else the late-planted crop would fall further behind in development.

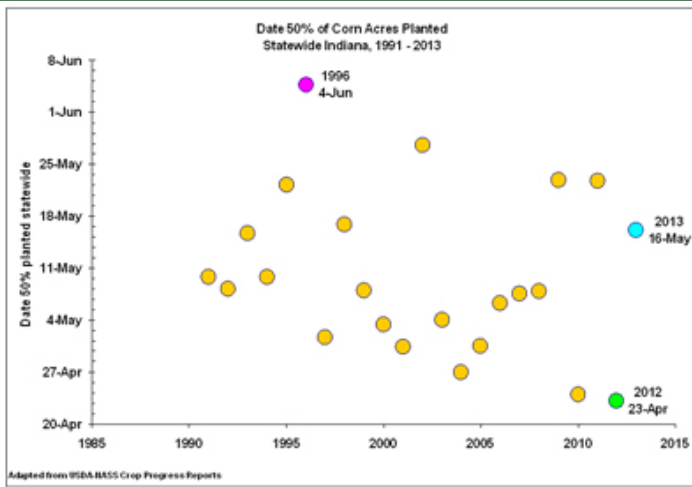


Figure 2. Historical perspective of dates by which half of Indiana’s corn crop was planted, 1991-2013.

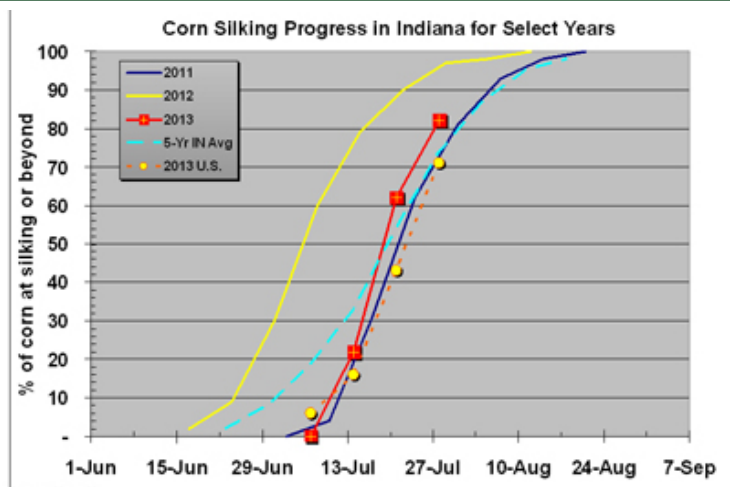


Figure 4. Percent of statewide corn crop at silking or beyond for select years, Indiana.

MGDD Departure, 5/1/2013 to 7/31/2013

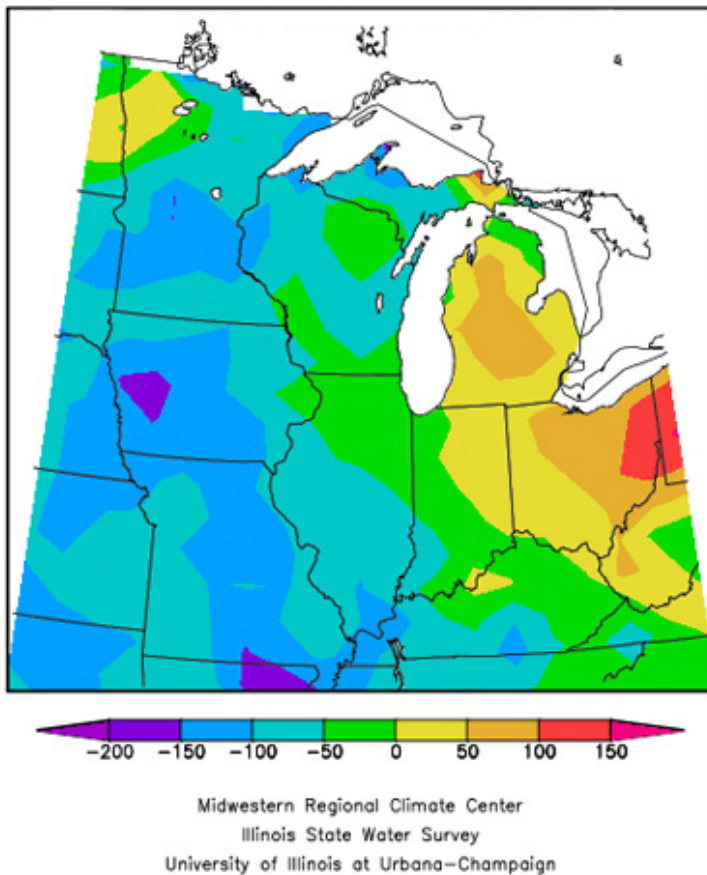


Figure 3. Departure from normal for GDD accumulation from 1 May 2013 through 31 July 2013 in the heart of the U.S. Corn Belt.

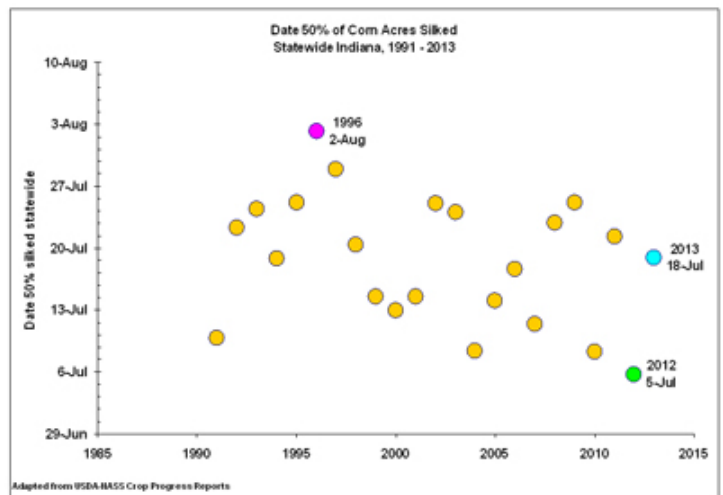


Figure 5. Historical perspective of dates by which half of Indiana’s corn crop had silked, 1991-2013.

Nevertheless, folks who planted their corn later than normal are now beginning to worry whether their crop will mature safely before a killing fall freeze. Their concern is heightened because the current weather forecast for the next two to four weeks calls for below normal temperatures throughout much of August (forecast as of 31 July by NWS Climate Prediction Center).

Remember that the phrase “mature safely” refers to the development of kernel black layer that signals the end of dry matter accumulation in the grain (Nielsen, 2008) and, thus, means that the crop is physiologically “safe” from the effects of fall frosts or freezes relative to impact on grain yield. Grain moisture content at physiological maturity typically ranges from 25 to 35 percent and so additional calendar time is required for dry down of the grain in the field before harvest.

There are two ways to estimate the dates by which a corn crop may reach physiological maturity.

As it is, the majority of the state’s crop pollinated during the last two weeks of July (Fig. 4). Another way of looking at it is that half of the state’s crop had pollinated by 18 July (Fig. 5), which interestingly is equal to the average date for 50 percent of the crop silked from 1991 to 2013. From that perspective, the 2013 Indiana corn crop is not that far behind in silking.

The first way is a general rule of thumb based on average calendar times from silking to maturity using historical crop progress data from USDA-NASS (Fig. 6). Since 1991, the average number of days between the date by which 50 percent of the state's crop reached silking to the date by which 50 percent of the state's crop reached maturity is about 62. Interestingly, there is not much relationship between the the date that the crop silked and the number of days from silking to maturity.

For example: A hybrid with a grain fill GDD rating of 1200 that silked the week of July 25 in northwest Indiana might be expected to reach kernel black layer towards the end of September or early October based on historical GDD accumulations after July 25. It is interesting to note that the estimate of crop maturity date using this method is very similar to that using the simpler rule of thumb based on 62 days between silking and maturity.

Few companies publish [silking to black layer] GDD values directly, but many publish hybrid GDDs from planting to silking and from planting to kernel black layer. Consequently, you can use the two values for a hybrid and calculate the GDDs from silking to black layer by subtracting the silk GDDs from the black layer GDDs. For example, a hybrid rated as needing 1300 GDDs to silking and 2500 GDDs to black layer would therefore require 1200 GDDs from silking to black layer ($2500 - 1300 = 1200$).

Disclaimer, Disclaimer, Disclaimer

As I indicate throughout this article, growing conditions throughout the remainder of the grain filling period greatly influence the actual number of days between silking and kernel black layer for any given field of corn. Coupled with inherent differences among hybrids, you should implement these rules of thumb cautiously and use the calculated predictions of maturity dates as approximations.

Related Reading

Nielsen, R.L. (Bob). 2008. Grain Fill Stages in Corn. Corny News Network, Purdue Univ. [On-Line]. Available at <<http://www.kingcorn.org/news/timeless/GrainFill.html>> [URL accessed Aug 2013].

Nielsen, R.L. (Bob). 2012. Heat Unit Concepts Related to Corn Development. Corny News Network, Purdue Univ. [On-Line]. Available at <<http://www.kingcorn.org/news/timeless/HeatUnits.html>>. [URL accessed Aug 2013].

USDA-NASS. 2013. Crop Progress. USDA Nat'l Ag. Statistics Service [online] <<http://usda.mannlib.cornell.edu/MannUsda/viewDocumentInfo.do?documentID=1048>>. [URL accessed Aug 2013].

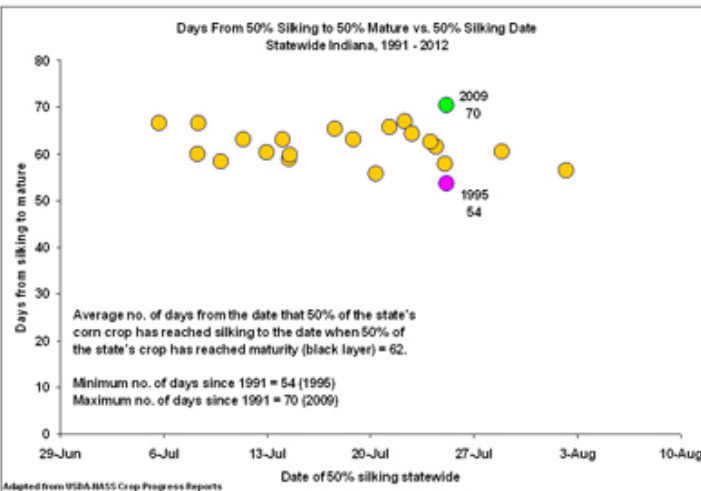


Figure 6. Historical perspective of the number of days from silking to maturity based on the dates by which 50% of the crop had silked or matured.

So, the rule of thumb is to add 62 days to the date(s) that your crop was pollinating and that will be the approximate date by which the crop(s) will reach kernel black layer (maturity). For example, let's say your crop pollinated around July 25. Add 62 days to that and the estimated date the crop may reach maturity is Sept 25.

Clearly, this rule of thumb is influenced by temperatures during the grain filling period. Warmer than normal temperatures will shorten the grain filling period and hasten maturity, while cooler than normal temperatures will lengthen the grain filling period and delay maturity. This effect of temperature during grain fill is best illustrated with the 1995 and 2009 growing seasons (Fig. 6). In each year, 50 percent of the state's corn crop had reached silking by 25 July. Yet, the 1995 crop (warm grain filling period) reached maturity in only 54 days after silking while the 2009 crop (cool grain filling) did not reach maturity until 70 days after silking.

The second way to estimate the dates by which a corn crop may mature is based on the anticipated GDD requirement from silking to kernel black layer. With this value in hand, knowledge of the silking date for the field, and access to historical weekly GDD normals (Nielsen, 2012), you can estimate the approximate week of the crop will mature..... assuming temperatures during grain filling are normal.

Weather Update

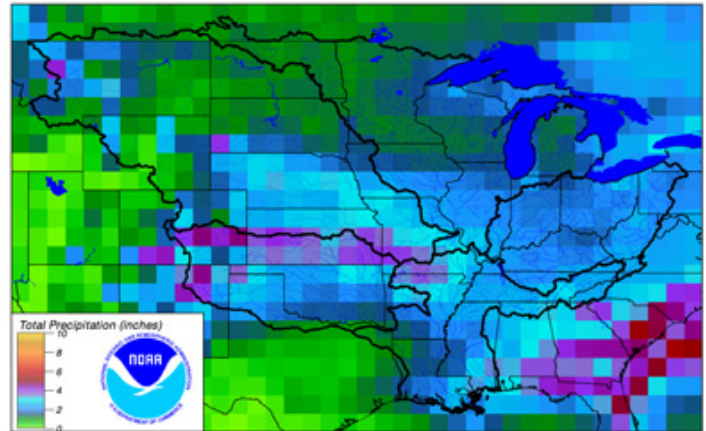
Weather Outlook by NWS OHRFC – (James Noel, NOAA/NWS/Ohio River Forecast Center) –

The trend is for continued normal to below normal temperatures and normal to below normal rainfall through the first half of August. It does appear we will have a chance of rain every 3-4 days across Indiana but with the core of the heat to our southwest it will be rainfall events that will be mainly on the light side and likely yield rainfall at or below normal. However, with temperatures continuing normal to below normal into the first half of August this will yield below normal evapotranspiration. This means we will also not need even normal rainfall for things to remain in a good and ample moisture across the state.

The latest 14 day temperature outlook can be found at: <http://www.cpc.ncep.noaa.gov/products/predictions/814day/814temp.new.gif>.

The latest 16-day rainfall outlook can be found at: <http://www.erh.noaa.gov/ohrfc/HAS/images/NAEFS16day.pdf>.

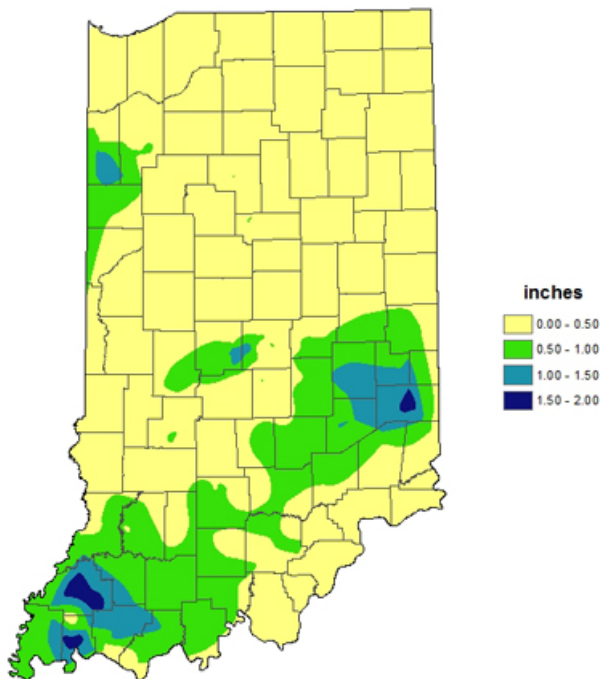
NAEFS 16-day Ensemble Mean Total QPF from 07/31/2013 12Z
Creation date/time: Wed Jul 31 19:30:16 EDT 2013



For individual location specifics visit water.weather.gov

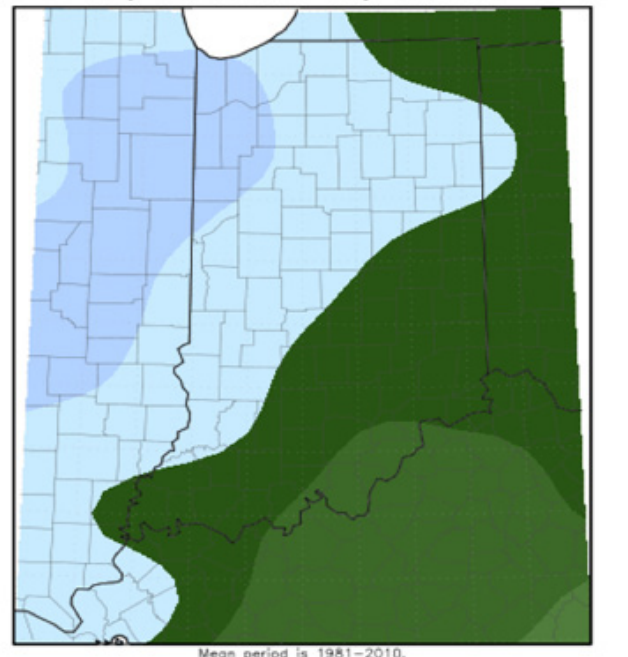


**Total Precipitation
July 25 - July 31, 2013
CoCoRaHS network
(465 stations)**



Analysis by Indiana State Climate Office
Web: <http://www.iclimate.org>

**Average Temperature (°F): Departure from Mean
July 24, 2013 to July 30, 2013**



Indiana State Climate Office www.iclimate.org
Purdue University, West Lafayette, Indiana
email: iclimate@purdue.edu

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