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Issue 16, July 22, 2016 • USDA-NIFA Extension IPM Grant

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Insects, Mites, and Nematodes

Agronomy Tips

Weather Update

Soybean Aphid Threshold Review: It's Still 250

Aphids/Plant – (Christian Krupke) -

- **Despite recent claims, the 250 threshold remains the best option for control.**
- **Spraying early is not recommended and rarely will pay off.**
- **Data supports the 250 threshold, everything else is unsupported opinions.**

We've recently heard of some questions about the 250-aphid threshold from states to the west of us, including the idea that spraying as soon as just a few soybean aphids show up is wise because their populations will invariably grow from just one to thousands of individuals. This has come up before and although it's a great way to sell insecticide, it is completely unsupported by facts and over a decade of study on this pest. Aphids have not been a serious issue in Indiana soybeans for years (knock on wood), but it is the time of year when they can colonize Indiana soybeans, so a review might be worthwhile. In short, scouting fields and treating when the average plant reaches 250 aphids is tried and true. Other recommendations can be safely ignored.

To read more (a lot more!) about the 250-aphid threshold and the science behind why it remains viable when commodity prices change, please check out the links below:

http://www.extension.umn.edu/agriculture/soybean/pest/soybean-aphid/soybean-aphid-biology-and-economics/

http://farmprogress.com/story-why-still-use-250-soybean-aphid-threshold-9-143984

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Soybean aphids

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A New Tool for Mite Management in Soybeans – (Christian Krupke) -

- **Agri-Mek SC (active ingredient abamection) recently approved for use in soybeans.**
- **Mite problems have been few and far between so far in 2016.**
- **Weeks of heat + low precipitation will lead to outbreaks.**

It's not every week that a new active ingredient is approved for use in field crops, so this is worth a newsletter entry – abamection is an effective miticide and has been for many years in a variety of specialty crops, including apples and other tree fruits. Effective against a variety of mite species, this should prove a welcome addition to the pest management toolbox for soybean producers during mite outbreaks. In the past, we've had to cobble together a management program with select pyrethroids and Lorsban (chlorpyrifos), and although this approach can work it is far from optimal and carries some hazards that include flaring mites. So this announcement is good news,

because we will see mite problems again at some point, it's just a question of "when".

2016 has not been a "mitey" summer so far – in general, crops are healthy and well-hydrated. A couple of weeks of high temps and no rain could change that so a review of mite i.d. and scouting is a good idea. Remember that a stressed soybean plant is one that is primed for mite infestation. Mites are always present, unnoticed, along field edges in grass/clover etc., and stressed soybeans along field edges will show damage first. Foliage damage from spider mite feeding is expressed initially as subtle stippling or "sand-blasted" appearance, which may progress to a bronzing and necrosis should dry conditions persist and mites left unchecked. Bronzed foliage is irreversible, meaning the damage is done at that point.

Before considering control, it is very important that spider mites are identified as the source of yellowish or bronzed plants in a field. Many readers are familiar with the process from 2012, when mites were a problem in many, if not most, soybean fields in the state. There are many other diseases, pathogens and nutrient deficiencies that can cause similar appearance in foliage. To confirm the presence of mites, shake some discolored soybean leaves over a white piece of paper. Watch for small dark specks moving about on the paper. Also look for very tiny, fine webbing on the undersides of the discolored leaves. Once spider mites have been positively identified in the damaged areas of the field, it is essential that the portions of the entire field be scouted to determine the range of infestation – spider mites are very patchy in colonizing fields and are often restricted to borders – meaning there is no need to treat the whole field.

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Western Bean Cutworm Numbers Continue to Impress in Northern Indiana – (John Obermeyer) -

Moth catches, see Western Bean Cutworm Pheromone Trap Report, continue to climb in northwestern counties of Indiana. This possibly is the peak period of moth flight. All corn without Bt-traits for this pest should be, if not already, scouted for this pest. Several have sent reports and/or pictures of impressive infestations, especially of multiple small larvae in silks. Just a note,

last year there were multiple cornfields with the Cry1F Bt-protein that had significant damage of the ears. It is not fully understood why this occurred, but certainly something to consider in areas of large moth numbers. Happy scouting!

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Western Bean Cutworm Pheromone Trap Report – (John Obermeyer) -

County:	Adams
Cooperator:	Kaminsky/New Era Ag
Wk 1	0
Wk 2	3
Wk 3	3
Wk 4	1
County:	Adams
Cooperator:	Roe/Mercer Landmark
Wk 1	0
Wk 2	0
Wk 3	4
Wk 4	7
County:	Allen
Cooperator:	Anderson/Syngenta Seed
Wk 1	0
Wk 2	0
Wk 3	0
Wk 4	0

County:	Allen
Cooperator:	Gynn/Southwind Farms
Wk 1	0
Wk 2	0
Wk 3	15
Wk 4	28
County:	Allen
Cooperator:	Kneubuhler/G&K Concepts
Wk 1	1
Wk 2	2
Wk 3	1
Wk 4	6
County:	Bartholomew
Cooperator:	Bush/Pioneer Hybrids
Wk 1	0
Wk 2	1
Wk 3	0
Wk 4	0
County:	Clay
Cooperator:	Bower/Ceres Solutions/Brazil
Wk 1	0
Wk 2	0
Wk 3	0
Wk 4	
County:	Clay
Cooperator:	Bower/Ceres Solutions/Bowling Green

Wk 1	0
Wk 2	0
Wk 3	0
Wk 4	
County:	Clay
Cooperator:	Bower/Ceres Solutions/Clay City
Wk 1	0
Wk 2	lost trap
Wk 3	0
Wk 4	
County:	Clay
Cooperator:	Bower/Ceres Solutions/Clinton
Wk 1	0
Wk 2	0
Wk 3	0
Wk 4	
County:	Clinton
Cooperator:	Emanuel/Boone Co. CES
Wk 1	0
Wk 2	0
Wk 3	0
Wk 4	4
County:	Clinton
Cooperator:	Foster/Purdue Entomology
Wk 1	0
Wk 2	0
Wk 3	2
Wk 4	2

County:	DeKalb
Cooperator:	Hoffman/ATA Solutions
Wk 1	0
Wk 2	0
Wk 3	0
Wk 4	60
County:	Dubois
Cooperator:	Eck/Purdue CES
Wk 1	1
Wk 2	0
Wk 3	0
Wk 4	0
County:	Elkhart
Cooperator:	Barry/Helena-Goshen
Wk 1	6
Wk 2	8
Wk 3	50
Wk 4	36
County:	Elkhart
Cooperator:	Kauffman/Crop Tech Inc.
Wk 1	9
Wk 2	58
Wk 3	100
Wk 4	75
County:	Fayette
Cooperator:	Schelle/Falmouth Farm Supply Inc.
Wk 1	0

Wk 2	0
Wk 3	2
Wk 4	0
County:	Fountain
Cooperator:	Mroczkiewicz/Syngenta
Wk 1	8
Wk 2	29
Wk 3	18
Wk 4	13
County:	Fulton
Cooperator:	Jenkins/N. Central Coop-Rochester
Wk 1	0
Wk 2	23
Wk 3	50
Wk 4	23
County:	Fulton
Cooperator:	Jenkins/N. Central Coop-Kewana
Wk 1	2
Wk 2	91
Wk 3	122
Wk 4	130
County:	Gibson
Cooperator:	Schmitz/Gibson Co. CES
Wk 1	0
Wk 2	0
Wk 3	
Wk 4	

County:	Hamilton
Cooperator:	Campbell/Beck's Hybrids
Wk 1	1
Wk 2	8
Wk 3	
Wk 4	0
County:	Hamilton
Cooperator:	Truster/Reynolds Farm Equipment
Wk 1	0
Wk 2	0
Wk 3	0
Wk 4	0
County:	Hendricks
Cooperator:	Nicholson/Nicholson Consulting
Wk 1	0
Wk 2	3
Wk 3	3
Wk 4	
County:	Jasper
Cooperator:	Overstreet/Purdue CES
Wk 1	6
Wk 2	20
Wk 3	50
Wk 4	118
County:	Jasper
Cooperator:	Ritter/Brodbeck Seeds
Wk 1	0
Wk 2	112

Wk 3	87
Wk 4	52
County:	Jay
Cooperator:	Boyer/Davis PAC
Wk 1	
Wk 2	0
Wk 3	3
Wk 4	1
County:	Jay
Cooperator:	Shrack/Ran Del Agri Services
Wk 1	0
Wk 2	0
Wk 3	
Wk 4	
County:	Jay
Cooperator:	Temple/Pennyville
Wk 1	
Wk 2	
Wk 3	1
Wk 4	
County:	Jay
Cooperator:	Temple/RedKey
Wk 1	
Wk 2	
Wk 3	2
Wk 4	
County:	Jennings

Cooperator:	Bauerle/SEPAC
Wk 1	0
Wk 2	1
Wk 3	0
Wk 4	1
County:	Knox
Cooperator:	Bower/Ceres Solutions/Vincennes
Wk 1	0
Wk 2	0
Wk 3	0
Wk 4	
County:	Knox
Cooperator:	Bower/Ceres Solutions/Frichton
Wk 1	0
Wk 2	0
Wk 3	0
Wk 4	
County:	Lake
Cooperator:	Kleine/Kleine Farms
Wk 1	6
Wk 2	12
Wk 3	11
Wk 4	9
County:	Lake
Cooperator:	Moyer/Dekalb Hybrids, Shelby
Wk 1	25
Wk 2	93
Wk 3	103

Wk 4	418
County:	Lake
Cooperator:	Moyer/Dekalb Hybrids, Schneider
Wk 1	19
Wk 2	156
Wk 3	219
Wk 4	369
County:	LaPorte
Cooperator:	Rocke/Agri-Mgmt Solutions, Wanatah
Wk 1	50
Wk 2	120
Wk 3	158
Wk 4	157
County:	Madison
Cooperator:	Truster/Reynolds Farm Equip.
Wk 1	0
Wk 2	1
Wk 3	0
Wk 4	3
County:	Miami
Cooperator:	Early/Pioneer Hybrids
Wk 1	2
Wk 2	88
Wk 3	94
Wk 4	47
County:	Newton
Cooperator:	Moyer/Dekalb Hybrids, Lake Village

Wk 1	39
Wk 2	263
Wk 3	309
Wk 4	454
County:	Porter
Cooperator:	Leuck/PPAC
Wk 1	3
Wk 2	9
Wk 3	40
Wk 4	146
County:	Pulaski
Cooperator:	Capouch/M&R Ag Services
Wk 1	1
Wk 2	4
Wk 3	6
Wk 4	
County:	Putnam
Cooperator:	Nicholson/Nicholson Consulting
Wk 1	0
Wk 2	0
Wk 3	2
Wk 4	0
County:	Randolph
Cooperator:	Boyer/DPAC
Wk 1	0
Wk 2	2
Wk 3	0
Wk 4	1

County:	Rush
Cooperator:	Schelle/Falmouth Farm Supply Inc.
Wk 1	0
Wk 2	0
Wk 3	0
Wk 4	0
County:	Shelby
Cooperator:	Fisher/Shelby Co. Co-Op
Wk 1	0
Wk 2	0
Wk 3	0
Wk 4	1
County:	Shelby
Cooperator:	Simpson/Simpson Farms
Wk 1	0
Wk 2	0
Wk 3	0
Wk 4	0
County:	Sullivan
Cooperator:	Bower/Ceres Solutions/Farmersburg
Wk 1	0
Wk 2	0
Wk 3	2
Wk 4	
County:	Sullivan
Cooperator:	Bower/Ceres Solutions/Sullivan
Wk 1	0

Wk 2	3
Wk 3	3
Wk 4	
County:	Tippecanoe
Cooperator:	Bower/Ceres Solutions
Wk 1	5
Wk 2	15
Wk 3	26
Wk 4	
County:	Tippecanoe
Cooperator:	Nagel/Ceres Solutions
Wk 1	0
Wk 2	7
Wk 3	20
Wk 4	10
County:	Tippecanoe
Cooperator:	Obermeyer/Purdue Entomology
Wk 1	0
Wk 2	1
Wk 3	2
Wk 4	1
County:	Tippecanoe
Cooperator:	Westerfeld/Monsanto
Wk 1	0
Wk 2	5
Wk 3	5
Wk 4	4

County:	Tipton
Cooperator:	Campbell/Beck's Hybrids
Wk 1	0
Wk 2	0
Wk 3	
Wk 4	1
County:	Whitley
Cooperator:	Walker/NEPAC
Wk 1	1
Wk 2	8
Wk 3	61
Wk 4	

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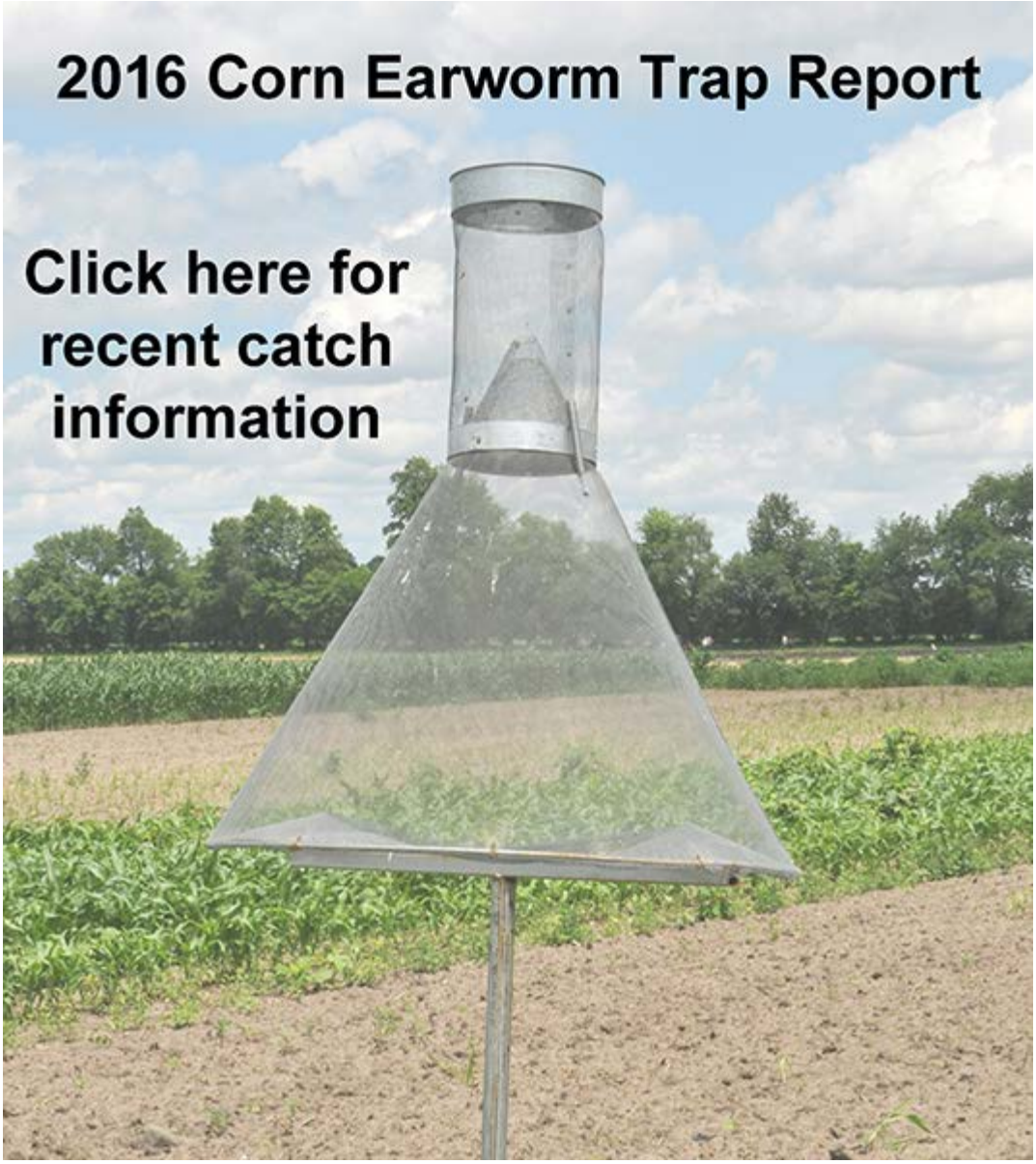
2016 Corn Earworm Trap Report – (Rick Foster) -



Corn Earworm Trap Report

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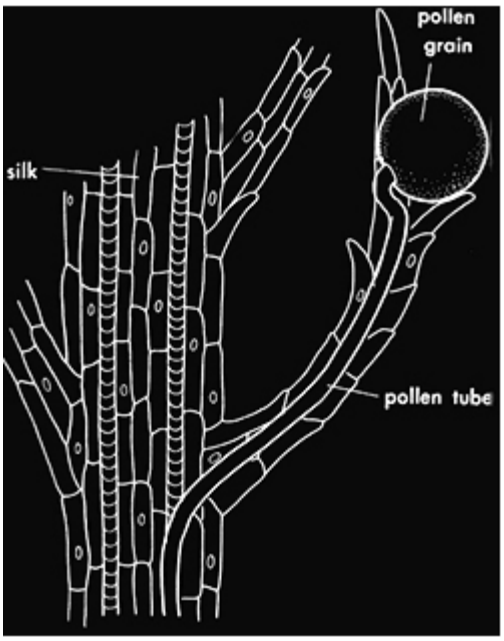
A Fast & Accurate "Pregnancy" Test for Corn – (Bob Nielsen) -

- **Pollination may fail for a number of reasons, including drought stress and insect damage to silks.**
- **Silks normally detach from fertilized ovules within days of successful pollination and this "symptom" can be used as an early indicator of pollination progress and/or success.**

Pollination in corn is the act of transferring pollen from the tassels to the emerged silks of the ear. Germination of pollen grains on receptive silks results in a pollen tube, containing the male genetic material, that penetrates and grows within the silk tissue down to the connected female ovule attached to the cob. Successful fertilization of the ovule by the pollen results in a kernel of corn.



Schematic of pollen tube growth inside silk.

Unfortunately, pollination of the silks and/or fertilization of the ovules sometimes fail. Severe drought and/or heat stress can interfere with the synchrony between pollen availability and silk

emergence or can desiccate exposed silks rendering them non-receptive to captured pollen grains. Silk clipping by corn rootworm beetles, Japanese beetles, and other obnoxious critters during pollination can be severe enough to impede pollen capture and germination.

Growers usually want an early assessment of the success of pollination, especially when a decision needs to be made whether insecticide applications are warranted to prevent further silk clipping by insects. Obviously, one could wait impatiently until kernel development was visibly apparent. Within about 10 to 14 days after pollen shed, developing kernels will resemble white blisters on the cob (Nielsen, 2013). Luckily for us, the corn plant exhibits an earlier indicator of pollination progress.

Silks attached to ovules on an ear of corn.

Pollen grains captured on silk trichomes.

Silk Detachment From Fertilized Ovules

Remember that each ovule (potential kernel) on the ear develops a silk (the functional “style” of the female flower) that elongates and eventually emerges through the ear’s husk leaves the tip of the ear shoot (Nielsen, 2016a). The silks represent the "pathway" for the male gametes in the pollen to fertilize the female gametes in the ovules.

Once a pollen grain is "captured" by a trichome or "hair" of a silk, the pollen grain germinates and develops a pollen tube that contains the male genetic material. The pollen tube penetrates the silk and, with adequate moisture and temperature, elongates down the length of the silk within 24 hours and fertilizes the ovule.

Silk detachment from fertilized ovules.

Ear with majority of silks detached, indicating nearly complete fertilization of ovules.

Within 2 to 3 days after an ovule has been successfully fertilized, the base of the attached silk will collapse and detach from the immature kernel. The kernel itself will usually not be recognizable to the naked eye at this stage. Silks of nonfertilized ovules remain attached, however, and will continue to lengthen and be receptive to pollen for up to 10 days after emergence from the ear shoot. Even if never fertilized, silks will remain attached to the ovules. Within days of full silk emergence, therefore, pollination progress may be estimated on individual ears by estimating percent silk detachment.

The Ear Shake Technique

For each ear, make a single lengthwise cut from the base of the ear shoot to the tip with a sharp knife, through the husk leaves to the cob. Slowly unwrap the husk leaves, taking care not to physically rip any silks from the ovules yourself. Then gently shake the ear. Silks of fertilized ovules will drop away; silks from unfertilized ovules will remain attached.

With practice, pollination progress can be easily determined by estimating the percentage of silks that fall away from the cob. Sampling ears at random throughout a field will provide an indication of the progress of pollination for the whole field. Watch video of the ear shake technique.

One Last Comment

While the "ear shake" technique helps you estimate pollination progress with respect to ovule fertilization, remember that pollination progress includes pollen shed progress. Check the tassels in early to mid-morning hours to determine whether anther exsertion and pollen shed are still occurring.

Remember, that anther exsertion and pollen shed typically begin on the central tassel stalk, then spreads progressively throughout the tassel branches (Nielsen, 2016b). If no further pollen shed is likely to occur, it doesn't matter how badly those nasty insects are clipping silks. Unfertilized ovules will remain unfertilized ovules if there is no pollen left in the field. Spraying the bejeebers out of a field at that point is simply a costly form of revenge.

Related References

Nielsen, RL (Bob). 2013. Grain Fill Stages in Corn. Corny News Network, Purdue Univ. [On-Line]. Available at http://www.kingcorn.org/news/timeless/GrainFill.html (URL verified July 2016).

Nielsen, RL (Bob). 2016a. Silk Emergence. Corny News Network, Purdue Univ. [On-Line]. Available

at http://www.kingcorn.org/news/timeless/Silks.html (URL verified July 2016).

Nielsen, RL (Bob). 2016b. Tassel Emergence & Pollen Shed. Corny News Network, Purdue Univ. [On-Line]. Available at http://www.kingcorn.org/news/timeless/Tassels.html (URL verified July 2016)

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Agricultural Tile Drains Clogged With Cover Crop Roots? – (Eileen Kladivko, Purdue University, Barry Fisher, Natural Resources Conservation Service, Larry Brown, The Ohio State University) -

During the winter and spring of 2016, specialists at Purdue University and the USDA-Natural Resources Conservation Service (USDA-NRCS) received numerous reports that roots were clogging tile drains. Other agricultural advisers were hearing similar stories and many were posting and reading about these reports online. The reports suggested that cover crop roots were to blame and some had photos showing roots and sediment blocking short sections of tile drains. Questions arose. Why would cover crop roots enter and proliferate in the tile this year and seemingly not in other years (there were some reports of roots in tile in prior years, but not as many)? Why did this appear to happen in specific locations and not others? Why would it happen with cover crops when it's generally not been a problem under grass waterways, hay fields, or wheat? And how can one manage cover crops or tile drainage systems to avoid this problem in the future? We do not currently have good answers for most of these questions, and other than anecdotal findings, research is limited. We will need research to provide better answers. We have talked with producers, contractors, and drainage engineers; have searched for published information; and have used our experience and knowledge of this year's conditions, and we think we can offer some possible reasons for what happened and possible solutions in the short-term. What might have caused roots to clog tiles? Although observations make it clear that apparently live roots (along with sediment) were present in the tiles, the causes of the clogging might originate with the cover crops, with the tile system, or with both. We'll discuss some possible contributing factors under

both of these categories. To read the rest of this article click here:

https://ag.purdue.edu/agry/extension/Documents/TilesandCoverCropRoots.pdf.

Roots and sediment clogging tile drain.

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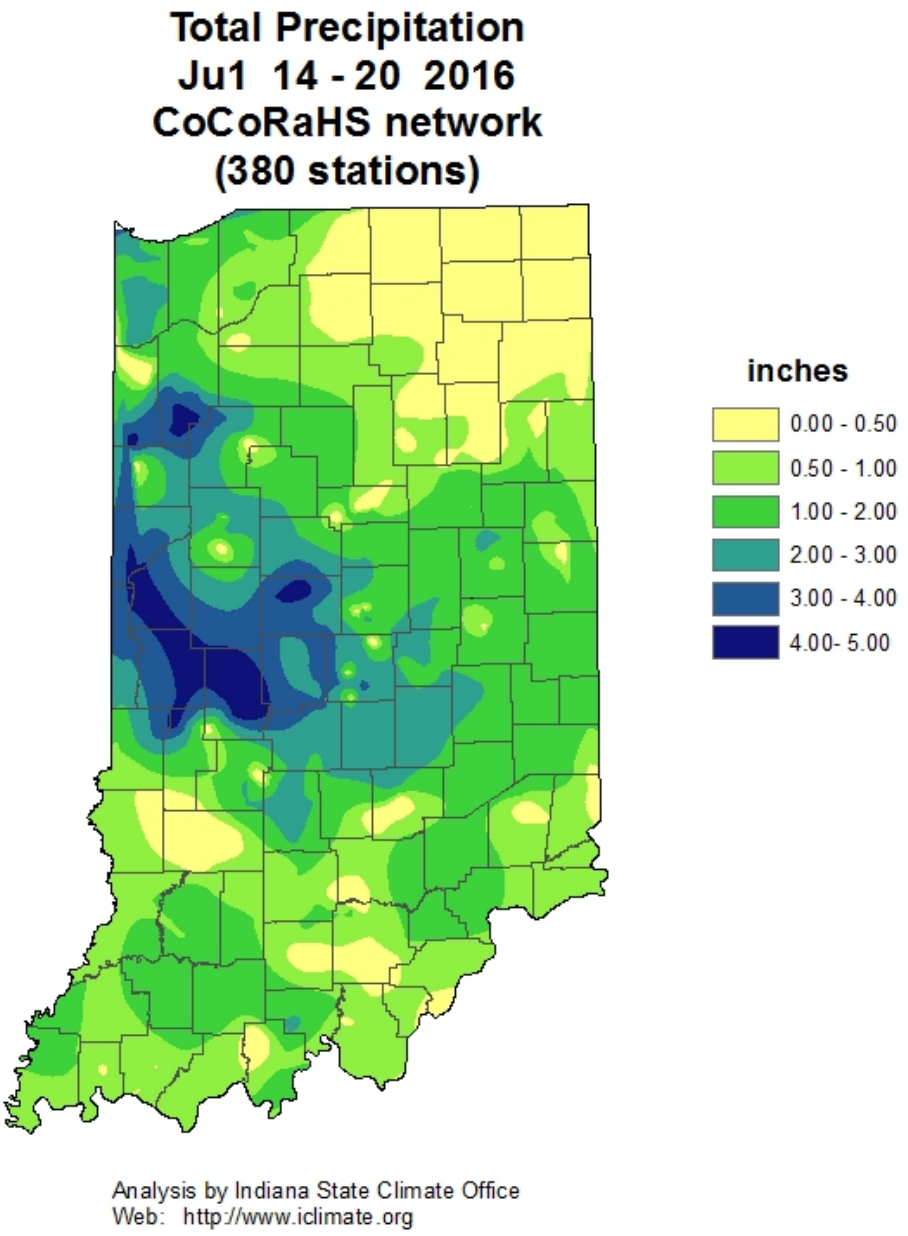
WEATHER UPDATE

Precipitation


Total Precipitation
Ju1 14 - 20 2016
CoCoRaHS network
(380 stations)
inches
0.00 - 0.50
0.50 - 1.00
1.00 - 2.00
2.00 - 3.00
3.00 - 4.00
4.00- 5.00
Analysis by Indiana State Climate Office
Web: http://www.iclimate.org

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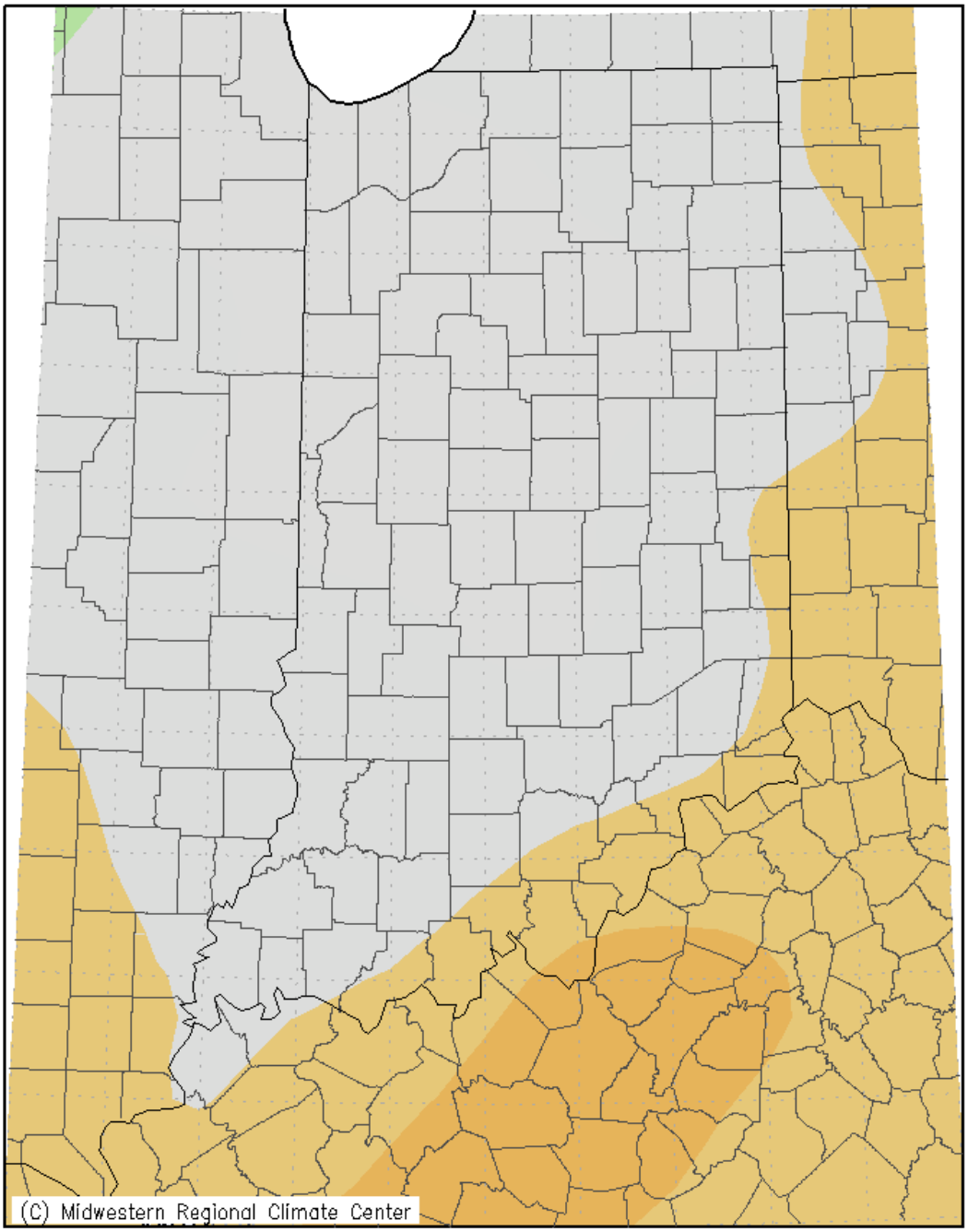
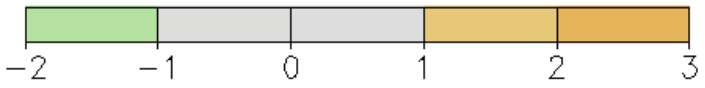
Temperature

Average Temperature (°F): Departure from Mean
July 12, 2016 to July 18, 2016



Mean period is 1981–2010.



Indiana State Climate Office www.iclimate.org
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THANKS FOR READING

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