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Insects, Mites, and Nematodes

Bits & Pieces

Weather Update

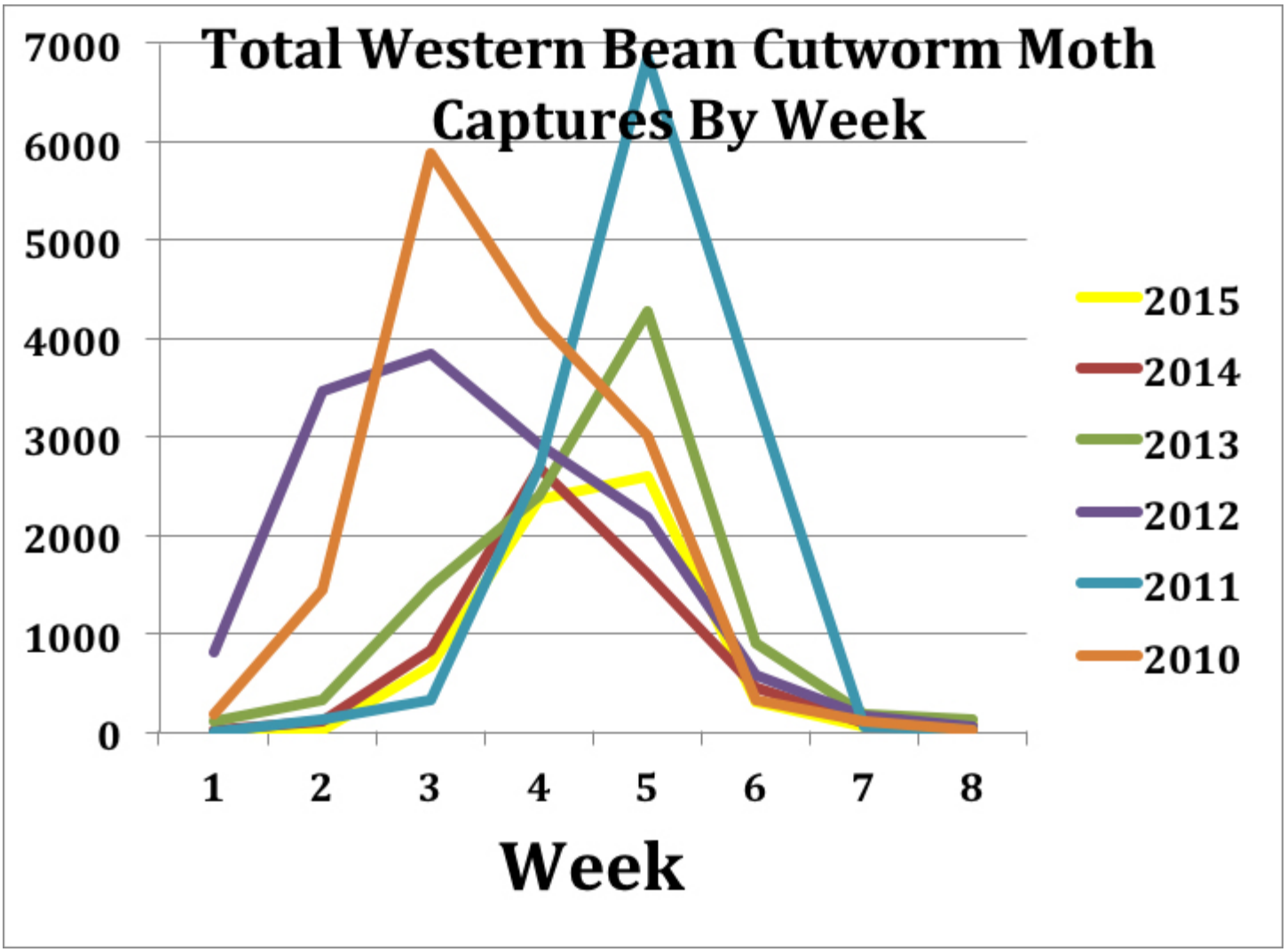
Unexpected Western Bean Cutworm Damage Observed in Bt Corn – (Christian Krupke and John Obermeyer) -

Western bean cutworm moth flights were monitored this season by many cooperators throughout the state. For eight weeks, late-June to mid-August, those numbers were posted in the *Pest&Crop*. **The**

graph accompanying this article shows that moth captures were similar to last season, both years being low compared to the previous four years (2010-2013). Nonetheless, this pest has not gone away, even though subjected to some atypical weather since its first documented presence in Indiana in 2006.

This year offers a new dimension in the Western Bean Cutworm story. Several reports from field personnel in northern Indiana counties indicate large levels of damage to field corn ears, some still with western bean cutworm larvae in them. For most of these fields, the damage was unexpected because the Bt-traited hybrids have historically offered good protection against this pest. We have heard of similar reports in other North Central States and Ontario. Expect to hear more on this in the future, as researchers try to confirm whether this is truly a case of resistance to the Bt toxin.

The Bt-protein must be ingested by the larvae before death by starvation occurs. So minor damage on the ear of Bt-expressing hybrids has long been recognized, usually as scarring/scraping on the tops of kernels. The type of feeding being found this year is much more severe, and larvae are not dying. In the late summer of 2010, we put together a video that shows that slight feeding on ears and how to perform a gene check of corn plants in question, this can be viewed below.



Total Western Bean Cutworm Moth Captures By Week.

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VIDEO: Western Bean Cutworm Field Gene Check – (Christian Krupke and John Obermeyer) -

This video was filmed and produced in 2010, with intent to show western bean cutworm damage in

trait-protected corn, although sporadic and minor in its coverage throughout the field. More importantly, this video shows how to test field-test corn with quick gene-check strips can be used to confirm that the Bt trait is indeed present and being expressed by plants – these check strips are available from seed industry reps. Note that this test is more reliable while some green leaf tissue is still present in the field. That window will soon be closing. Happy Scouting!

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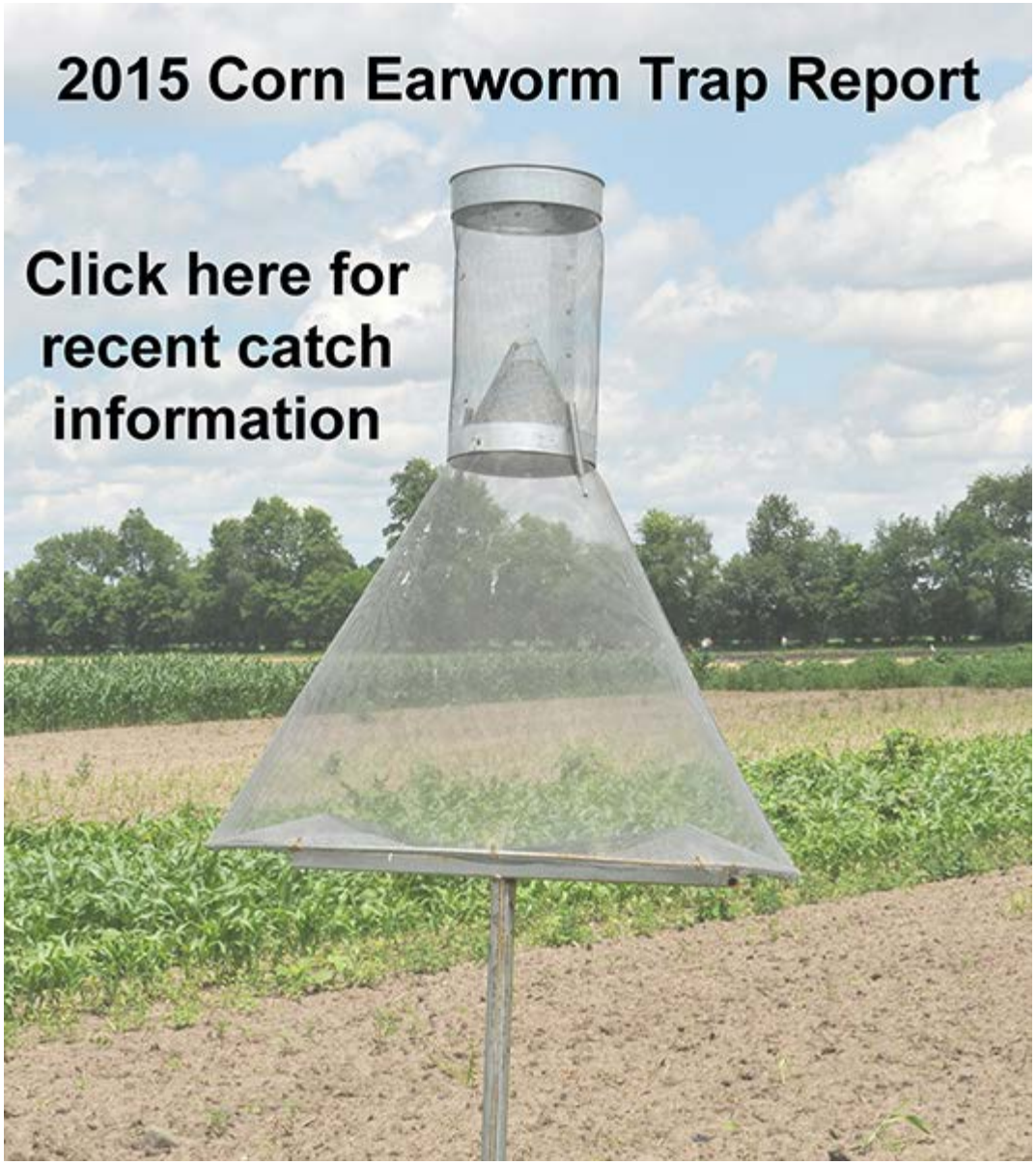

Corn Earworm Trap Report.

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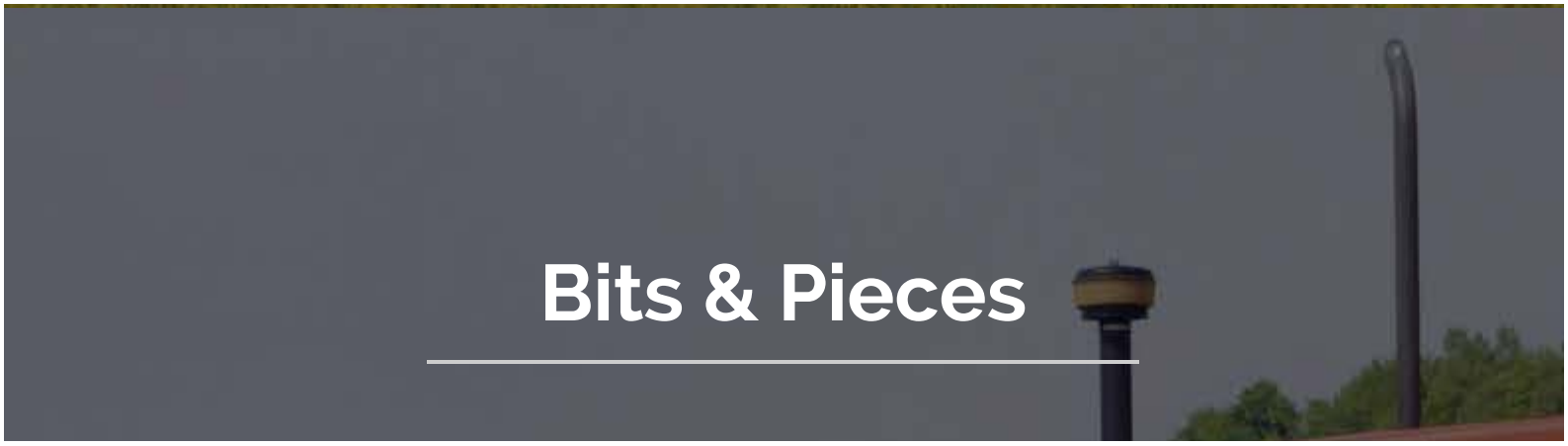

Grain Post-Harvest Checklist for 2015 – (Klein Ileleji, Agri. & Biol. Engr.) -

Expectations of 2015 Grain Harvest in Indiana:

The growing season in Indiana and some other Midwestern states has created some challenges for this year's corn crop. The frequent and heavy rains that caused some fields to flood reduced yields and created variability in maturity. Therefore, as we approach harvest, it would be important to prepare adequately so that we prevent quality deterioration of the crop that we are able to harvest. This article addresses preparations that will ensure your post-harvest operations run smoothly and that you are able to safely store your crop.

Before I go into pre-harvest preparations, I'd like to highlight a few things that Purdue Agronomist Professor and Extension specialist, Dr. R. L. (Bob) Nielsen has predicted that growers could encounter during this year's corn harvest. Because of the wide variability in maturity occurring in some fields due to stunted growth caused by water damage, there may be moisture differences in the harvested crop. Stunted development could cause variability in cob size and kernel numbers per cob, thus making the use of proper combine setting quite important in order to minimize losses during combining. It is advisable to constantly check your combine performance for losses, kernel damage or grain cleanliness, and consult with your equipment dealer or manufacturer's technical department for recommendations on proper setting. While the variability in moisture cannot be accurately predicted, there could be 5 to 10 percentage points in corn moisture within the same field depending on the weather conditions during the growing season. This will make it more difficult to select the correct dryer setting to dry safely to your target moisture without over-drying or under-drying some of the corn. As part of scouting your fields, you should try to determine the variability of the moisture content of corn from different locations in your field, especially in fields were there are obvious differences in the maturity of the plants. Once grain is binned, applying extra ambient air aeration has been shown to successfully equalize kernel variability in the bin and some equipment manufacturers have suggested fans be run continuously for at least 7-10 days. Secondly, because

some growers were unable to apply herbicides in a timely manner, there could potentially be more weeds that will cause more than the normal amount of trash to be taken in by the combine. Therefore, attention will need to be paid to adjusting combines appropriately and using a cleaner to remove trash prior to drying. Note that the trash mixed with grain holds more moisture, which will reduce dryer capacity and performance and potentially also could cause dryer fires because of the greater combustibility of the trash. Remember to use the rule of thumb for recommended storage period based on moisture: for corn to be sold in the spring (about 6 months storage) dry to 15%, 14% for up to one year and 13% beyond one year. However, for poor quality grain, reduce these moistures by one percentage points.

According to Dr. Kiersten Wise, Associate Professor and field crop Extension specialist of Purdue's Botany and Plant Pathology Department, bean quality issues from the disease perspective should be somewhat limited this year, or at least not more of a concern than normal. The majority of quality issues will likely come from environmental stresses and disease is almost a secondary player in many cases. Because soybean plants experienced similar flood conditions, stunted growth in plants on flooded fields could lead to variability in plant maturity, and thus bean moisture content. Similar to corn, growers should scout fields prior to harvest to determine the extent of field variability. Should above the normal amount of green beans be harvested, it would be important to apply more aeration in order to even out moisture and reduce seed susceptibility to deterioration by fungi. According to studies by Iowa State University, green beans would tend to read about 1.5 percentage points lower than they really are and so about 1.5 percentage points should be added to the moisture read by the moisture meter. Like with corn, extra ambient aeration of binned beans will equalize the variable moisture content. Also follow the rule of thumb for how long to store storage based on moisture: store 13% moisture beans for up to 6 months, 12% for a year and 11% for more than one year. Remember to reduce these moisture by one percentage points, should you be storing low quality beans.

Post-harvest Checklist:

It is important to check your grain dryer, bins and ancillary handling equipment (auger, elevator legs, etc.) to make sure they are ready to be used. Here are some items for your to-do list:

- Check for wear and tear on equipment (dryer, fans, burner, etc.) and replace parts so that the equipment can be safely operated. This also includes items like rungs on ladders attached to equipment.
- Clean equipment and bins by removing debris left over from last season. Look for accumulations

of fines and for sites that could harbor insect pests or vermin or attract birds. Pretreat bins with residual sprays if insect infestations are present.

- Service equipment accordingly
- Secure enough fuel for operation and plan on keeping a log of your fan operating hours
- Check and calibrate moisture meters and in-bin sensors, to ensure that they are working properly. Calibrate your moisture meter and check its readings against those obtained for the same sample of grain at the elevator where you plan to deliver the grain.

When in doubt, use the manual as a guide or work with your equipment dealer. The goal is to make certain your equipment is working according to the manufacturer's specifications. Also follow National, State and Local regulations and do not attempt to make repairs to gas lines or electrical equipment and wiring unless you are licensed to do so. Safety first should always be your number one rule.

I also have a few reminders with regard to preparing grain bins for the harvest.
Sanitation. is the first and least costly option for reducing insect pressures in your grain bins before grain is stored in your bins. Clean bins thoroughly removing all carry-over grain kernels. If you haven't done so in years, it might be necessary to clean the plenum below the perforated bin floors. Fines and broken kernels build up in the plenum and could not only obstruct airflow, but also provide a breeding ground for insect pests.

Use an approved residual empty bin insecticide. Check with you local Extension educator, Office of the Indiana State Chemist or Purdue University Stored Products Entomologists for the list of approved insecticides that can be used to treat empty bins. Those who can do so may want to use a heat treatment to kill insects. Studies by Tilley et al. (2007) show that raising the temperature to a minimum of 50oC (122oF) for 2-4 h will effectively eliminate live adults of many of the major primary (weevils) and secondary (beetles) insect pests. These findings were supported by work of Hulasare et al. (2009). Heat treatment will be important for organic producers who are not able to use chemical treatment.

Ensure your grain dryer is operated correctly. Dryers need to be cleaned out and prepped for operation. Make sure guards and safety equipment are in place, sensors are working and there are no gas leaks. Clean regularly (weekly at least) during use to prevent build-up of trash and debris, which would reduce the dryer's performance and could lead to a fire. Should there be variable moisture in a given batch, rather than using the low or high moisture extremes as the basis for setting your final target moisture, use the average moisture. Make sure grain is thoroughly mixed, that is mix wet and dry batches during harvest and drying, which would help reduce variability. Also, ensure that fans are

run continuously (ambient aeration) after drying for at least 7-10 days to not only cool grain to ambient temperature, but also equalize grain moistures in the bin. Ensure that you secure adequate fuel to handle your harvest and for your other needs through the winter months.

Cooling grain adequately to ambient temperature is an important step in preserving storage life. Depending on weather, bin size and fan specifications, fans will need to be run continuously for half a day or more to get temperatures to ambient levels. Use temperature cables to monitor the cooling front during aeration. As mentioned before, ambient aeration will also help equilibrate moisture differences in the bin but this will require more fan hours as previously stated. Sampling the bin with a deep bin probe or trier, especially ensuring that the topmost layers 5-6 ft below the surface is dried is advisable. When doing this, please ensure that you follow safe bin entry practices and never work alone.

The harvest months are always busy, but planning ahead will definitely help ease some of the burden and put you in a better position for successfully storing your harvested corn and soybeans. Remember safety procedures! Be cautious, and avoid hurrying. Don't let the extra demands of a challenging harvest season push you into a dangerous situation.

References:

Tilley, D.R., M.E. Casada, F.H. Arthur. 2007. Heat treatment for disinfection of empty grain storage bins. Journal of Stored Product Research. vol. 43: 221-228.
Hulasare, R., D. E. Maier and D. J. P. Moog. 2009. Testing and Demonstration of Propane-Fueled Mobile "Thermal Remediation" Pest Management System for Farms. PERC docket 11958, Final report submitted to TempAir, Burnsville, MN.

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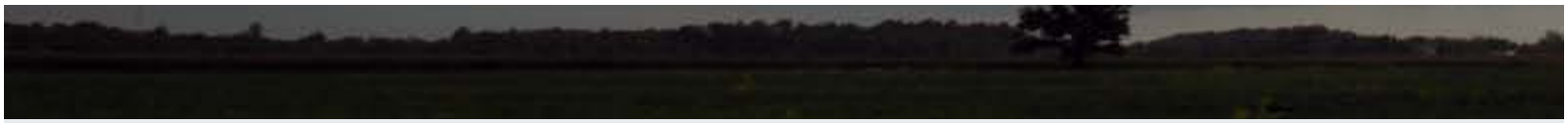
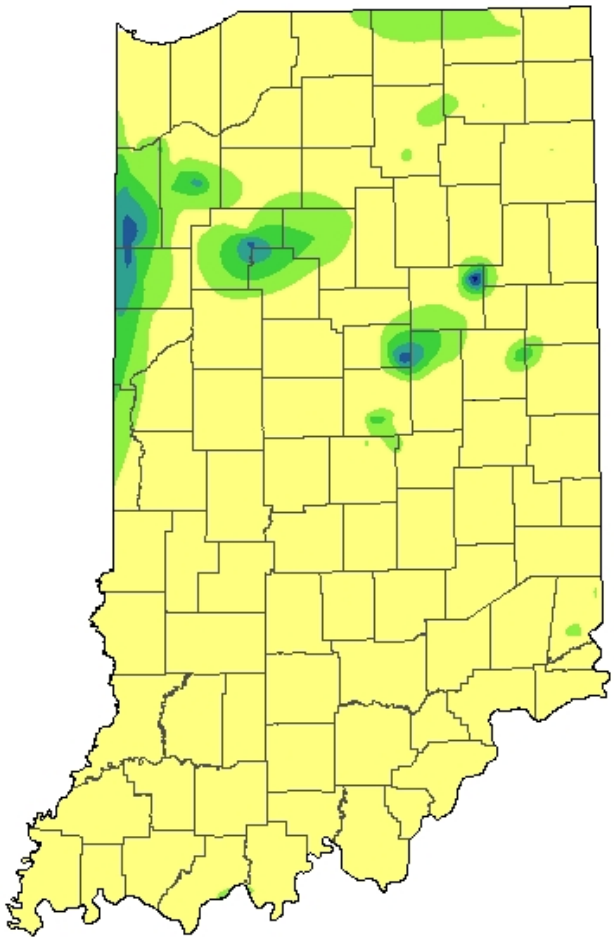


Precipitation

Total Precipitation
August 27 - September 02, 2015
CoCoRaHS network
(387 stations)



inches

- 0.00 - 0.50
- 0.50 - 1.00
- 1.00 - 1.50
- 1.50 - 2.00
- 2.00 - 2.50
- > 2.50

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

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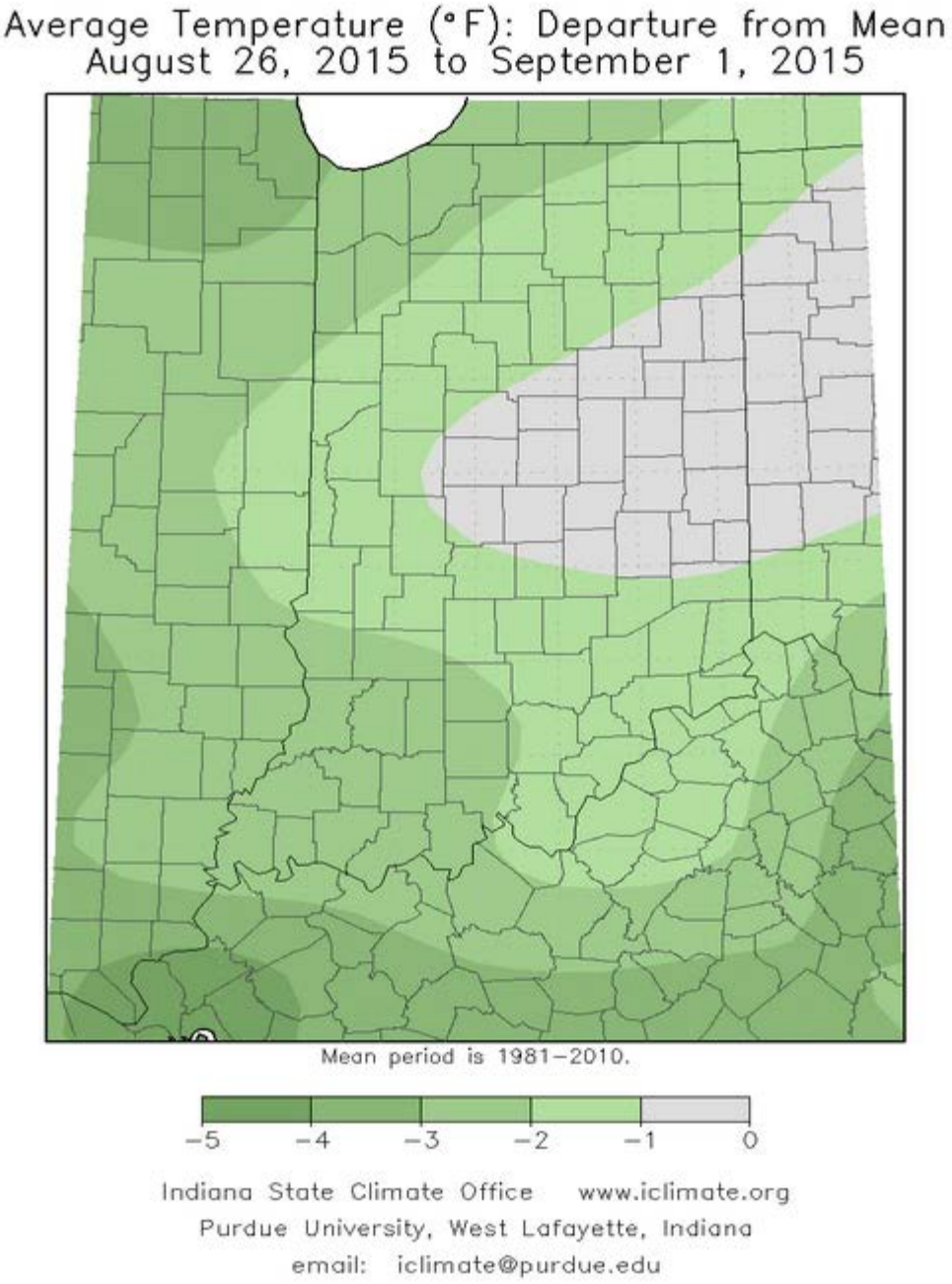
Temperature



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