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Insects, Mites, and Nematodes

Bits & Pieces

Weather Update

An Open Letter to the Seed Industry Regarding the Efficacy of the Cry1F Bt Against Western Bean Cutworm - October 2016 – (Dr. Chris DiFonzo, Michigan State University; Dr. Christian Krupke, Purdue University; Dr. Andy Michel, The Ohio State

University; Dr. Elson Shields, Cornell University; Dr. Kelley Tilmon, The Ohio State University; and Dr. John Tooker, Pennsylvania State University) –

This open letter was prepared by the undersigned extension entomologists from the Great Lakes Region regarding the efficacy of the Cry1F (Herculex 1, TC1507) trait on western bean cutworm (WBC; Striacosta albicosta). We strongly urge seed companies to remove the designation of "control" for this pest with regard to this toxin.

At the time Cry1F received regulatory approval in 2001, western bean cutworm was found in the far western Corn Belt (Colorado, Idaho, Nebraska, and Wyoming), with occasional movement into western Iowa. Indeed, EPA's original Biopesticide Registration Action Document (BRAD) for Cry1F Bt corn, published in August 2001, did not even mention WBC. Instead, the following language was used: "The registrant-submitted data indicate that Cry1F protected corn offers excellent control of European corn borer, southwestern corn borer, fall armyworm, black cutworm, and suppression for the corn earworm." References to Cry1F giving "excellent protection" against WBC began to appear in marketing literature only after Iowa State University entomologists documented its eastward range expansion and the first economic damage in that state. Presumably this rating was based on a limited number of lab assays and field trials done in pure Bt stands, not Refuge-in-a-Bag hybrids.

The rapid eastward range expansion of WBC across the central Corn Belt into the Great Lakes Region resulted in a dramatic increase in the number of WBC-infested acres in a short time period. This created a large-scale 'efficacy test' of Cry1F hybrids to (as stated in the BRAD) "provide highly efficacious control of key Lepidopteran pests", "reduce the use of more toxic chemical insecticides" and "reduce levels of mycotoxin in corn". In all these regards, Cry1F has failed in our states. This season in particular, the level of larval infestation and damage is troubling in both single and pyramided Refuge-in-a-Bag hybrids from multiple seed companies. Wherever Cry1F is challenged by WBC, it fails to provide observable benefit to producers. We have collectively fielded dozens of phone calls and emails, and visited numerous fields; we know that our agribusiness contacts and seed industry agronomists have responded to many more, and corn acres were sprayed with both insecticides and fungicides (most too late and with little hope of benefit). People are frustrated and angry and, more importantly, yield was lost. Growers purchased Cry1F hybrids with the

understanding that the trait provides "control", thus negating the need to scout for egg masses or larvae in those fields. When the visible manifestations of damage became apparent late in the season, such as the intense ear-feeding we witnessed, it was far too late for rescue treatments. As the fall progresses and damaged corn is harvested, additional issues are sure to arise regarding quality and mycotoxin levels. The severity of the latter will largely be dependent on weather conditions favorable for ear mold development. What is certain is that many damaged ears are primed for fungal colonization and quality loss.

As extension educators and specialists, we can no longer refer to Cry1F as providing WBC control. In fact the opposite is true, and our extension recommendations (including the Handy Bt Trait Table) will be changing to classify Cry1F hybrids for WBC the same as non-Bt, Cry1Ab, or double/ triple pro hybrids, all of which provide no control. In other words, we believe that Cry1F fields must be scouted for egg masses and sprayed with foliar insecticides if needed, the same as a non-Bt corn. Western bean cutworm is now the PRIMARY Lepidopteran ear pest in many parts of the Great Lakes region. For growers in our states, the costs of scouting and spraying Cry1F corn negates a major reason they purchased and planted a hybrid with the trait in the first place.

Before growers make seed choices for 2017, we again urge the seed industry to acknowledge the reality of what is happening in the field, and to reclassify Cry1F in hybrid fact sheets, technical use agreements, and other educational materials. This would reduce grower expectations of Cry1F and allow local agricultural professionals to deal with their customers in a more truthful manner, in a way that allows for protection against yield loss. We also urge the industry to regard western bean as a primary, not a secondary, pest. Doing nothing risks alienating those close to the situation, including field agronomists, consultants, university extension staff and (most importantly) corn growers themselves who have a vested interest in finding effective pest management solutions for a growing world.

Christian Krupke inspecting WBC damage on trait protected corn.

Multiple WBC feeding sites and subsequent molds.

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Nematode Updates - Now is the Best Time to Sample for SCN – (Jamal Faghihi and Virginia Ferris) -

Soybean Cyst Nematode (SCN) has been, and continues to be, a problem in Indiana soybeans. However, this time of the year those cysts are no longer visible on mature plant roots but they are residing in the soil. They can be extracted at our nematology lab from the soil samples submitted by growers to reveal the severity of the problem.

We have been warning growers that the field populations of SCN in Indiana are changing in ways that render the most common source of resistance to SCN (PI88788) less effective. Other researchers in the region have reported similar trends. We have also reported that symptoms of the Sudden Death Syndrome (SDS) in many of the SCN infested fields are more severe when PI88788 resistance is no longer effective. Even though SDS symptoms are not caused by the SCN, the SDS severity is magnified when a resistance-breaking population of SCN is present in the soil.

We continue to emphasize the importance of soil tests as the only accurate way to know whether the numbers of SCN are changing and whether a resistant variety is still effective. We have to emphasize that genetic shifts in SCN populations are gradual, and growers should not wait for obvious yield losses before determining that a change in the SCN population has occurred. If genetic determination (HG-type or race test) has been performed for a field population in the past, you might want to repeat the test after about four soybean crops to measure any possible changes. If no genetic profile exists for a field, one must be established so future comparisons are possible. In other words, simply planting SCN varieties said to be resistant is no longer an effective solution to the SCN problem; and areas with high levels of both SDS and SCN need to managed simultaneously. The management of this highly adaptable nematode pest is an ongoing and dynamic situation that requires constant vigilance.

The best way to manage SCN over the years is to monitor your populations by sampling each field at least every four years. In fields with a history of SCN and SDS, growers should select varieties that have resistance to both the disease and nematode. You can sample the soil anytime of the year and get an accurate understanding of the cyst population. Now is the best time to sample for SCN. This is a very crucial step in SCN management and should not be neglected. We provide this service to soybean growers at the cost of $10/sample. For more information on how to sample and where to submit samples you may visit our Nematology website: https://extension.entm.purdue.edu/nematology/.

If you have any questions about plant parasitic nematodes, you can contact Jamal Faghihi at 765-494-5901 or send an email to jamal@purdue.edu. Soil samples for nematode analysis can be sent to: Nematology Laboratory, Purdue University, Department of Entomology, Smith Hall, 901 W. State Street, West Lafayette, IN 47907-2089.

Collecting soil for nematode analysis.

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Fall Armyworm Outbreaks Reported – (John Obermeyer) -

Last week, we received calls from southern and northern Indiana counties concerning "worms" devouring cover crops. This tells me that this can be occuring anywhere in the state. From their description of the caterpillars and damage of the various crops, it is likely fall armyworm. Just like a very similar species, the armyworm, the behavior is much the same in that they can consume large amounts of foliage as they move enmasse. One major difference, is that fall armyworm feeds on both grasses and broadleaves.

Those with late season crops (ANYTHING GREEN) should be inspecting for feeding damage. This is very important for newly seeded forages. Below is listing of high-risk situations until a killing freeze occurs:

- **Newly seeded grasses of any kind, including but not limited to grass and mixed grass / alfalfa hay fields, and early planted wheat.**
- **Established mixed grass and alfalfa hay, grass forages, lawns, parks and playing fields, etc. This insect really likes Bermuda grass, but fescue as well.**
- **Cover crops of ALL types, including cereral rye and crucifers.**

Happy scouting!

Fall armyworm destroying alfalfa.

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Pest&Crop Survey 2016

Dear *Pest&Crop* reader, your input on the following survery will help us gauge the value of this newsletter to you and to make any improvements needed. It will only take a few moments to complete, and it will help us to justify our effort to produce this weekly publication. This survey is voluntary and anonymous. All information collected is confidential and no hidden tracking of individual responses is being used. Won't you please take a few minutes to give us your feedback? Thank you!

Pest&Crop 2016 Survey

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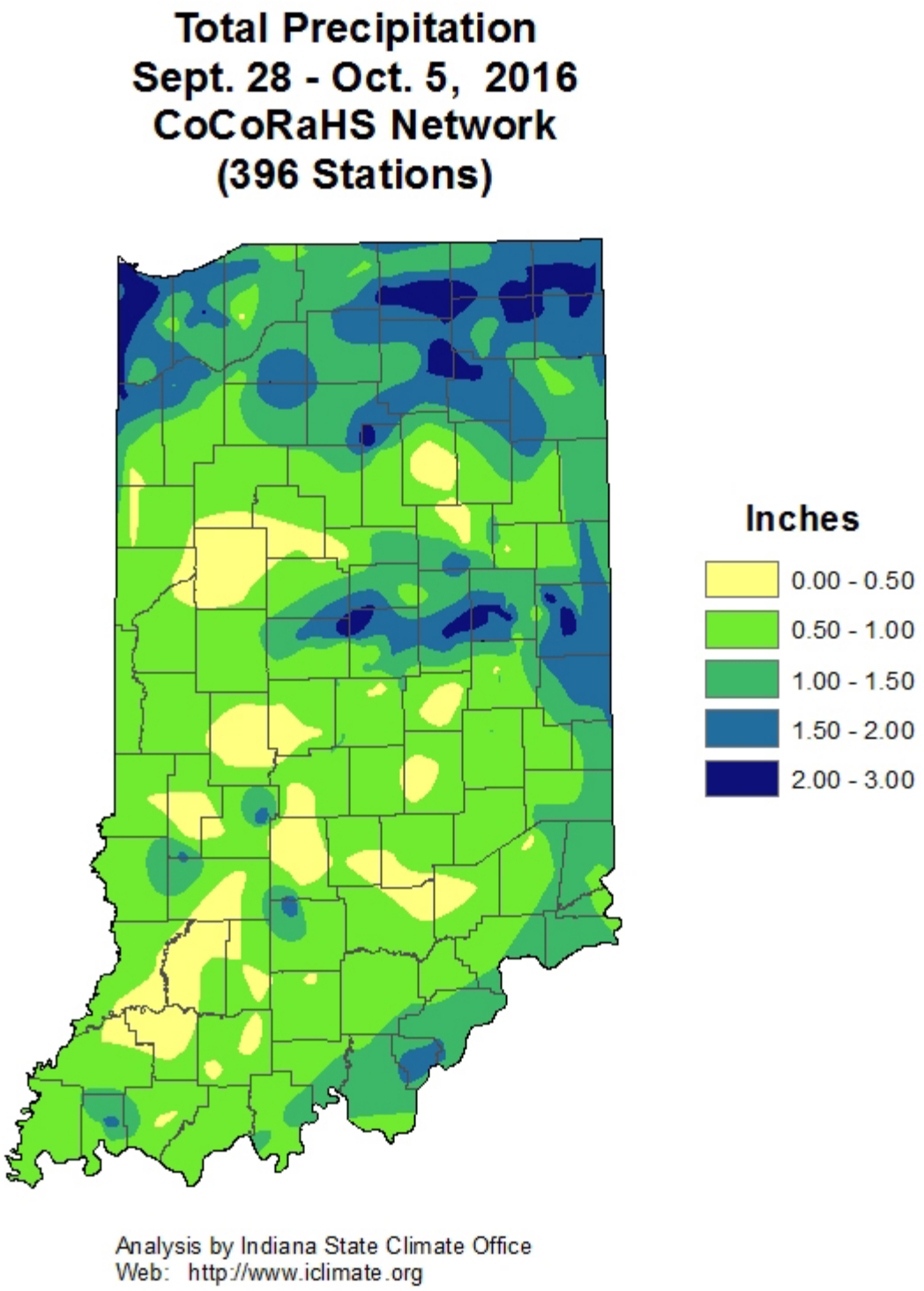
WEATHER UPDATE

Precipitation



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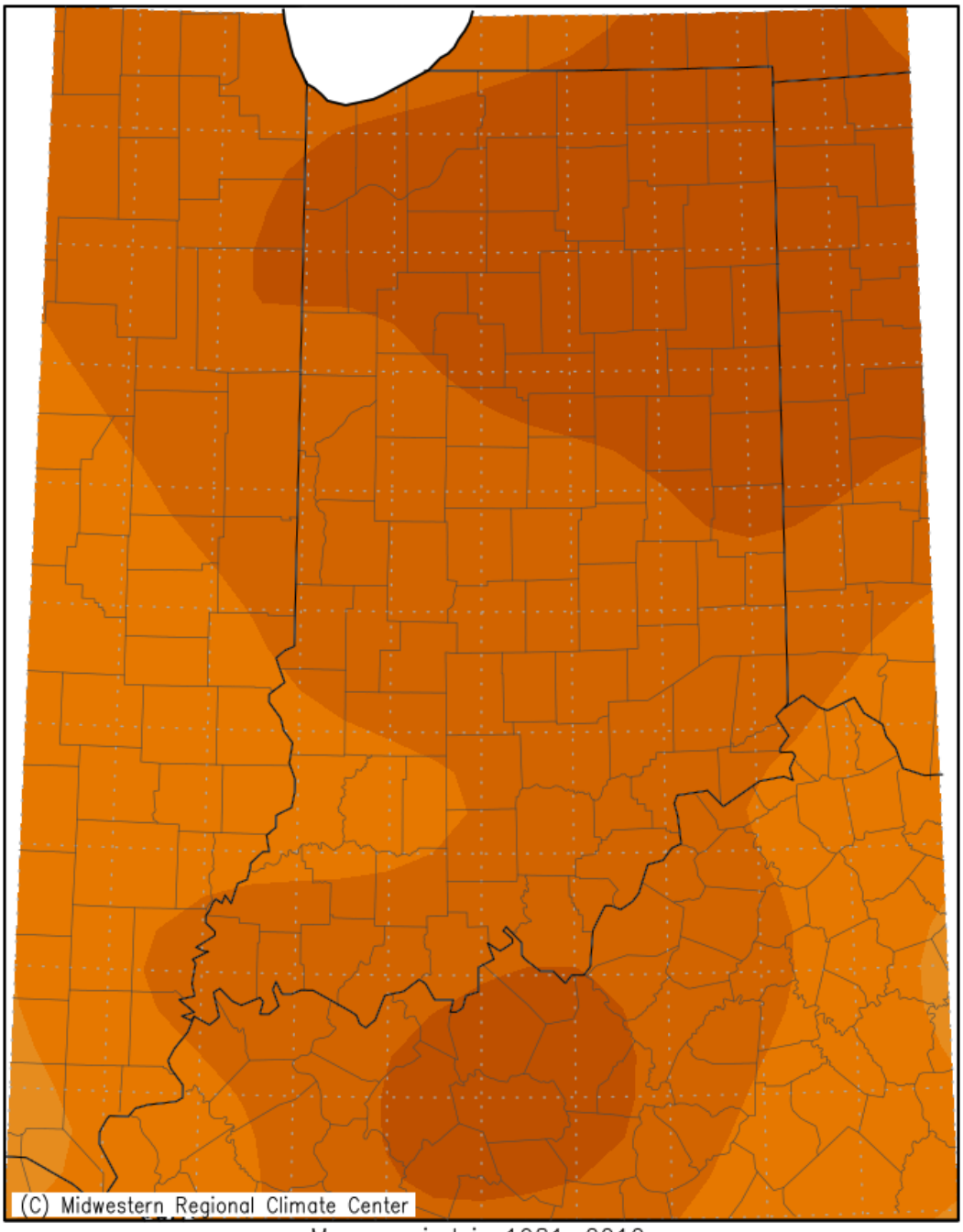
Temperature

Average Temperature (°F): Departure from Mean
October 2, 2016 to October 8, 2016



Mean period is 1981–2010.

Indiana State Climate Office www.iclimate.org
Purdue University, West Lafayette, Indiana
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THANKS FOR READING

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