Purdue Cooperative Extension Service

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In This Issue

Insects, Mites, And Nematodes

High Commodity Prices and IPM or Because We Can Afford It, Should We? – (*John Obermeyer*)

- Misconceptions about insects, their damage, and certainly their control abound.
- High fuel prices don't justify combining pesticide applications.
- Economic thresholds are based on more than crop price.
- Kill it, kill it again!

Bob Nielsen's article "A Recipe for Crappy Stands of Corn" in this issue's Agronomy Tips so well describes mistakes made early that affect the crop throughout the season. In a similar tone, some of the far-fetched questions/ideas I have gleaned from producers this past winter about insect pests and control has prompted me to address the following: "after all, corn is selling at $ ____/bushel (you fill in the price) and losing one kernel, much less one plant, per acre just might make the difference!" Sound familiar, good… please read on.

Let me start by saying, it sickens me that a few (certainly not most) predator-like companies/suppliers are feasting on some producer's natural "insect-fear" when it comes to their crop. Thus, 30+ years of tried and proven pest management is thrown out the window, because using their product this year, might prevent the "one-eyed, one-horned, flying purple" corn-plant-eater destruction. Of course, scouting fields to determine pest presence takes time or hiring a consulting firm to monitor acres for the unexpected/occasional pest would cost money. Interesting, for about the same price as that "cure-all" insecticide, fields can be scouted multiple times. Timely scouting, and insecticides if needed, will prevent pest outbreaks from negatively affecting yield, making a difference on the producer's bottom line.

Ignorance of pests/beneficial identification and biology has led to the "shoot first and ask questions later" approach. This has been quite evident with soybean aphid over the last couple years. Simply, fields are getting treated because the neighbors are or it is convenient to include an insecticide with another pesticide being applied, even if it is at the wrong time. Treating and killing a low level of insect pests is one thing, but wiping out the diversity of natural enemies may spur pest outbreaks. One of my favorite quotes to describe the complexity of IPM is from John Muir, famous naturalist, "when one tugs at a single thing in nature, he finds it attached to the rest of the world." Recognizing pests from other critters, understanding pest biology, and knowing the pest's potential

damage will prevent needless insecticide applications. This savings in pesticide and application costs is a direct value, but says nothing for the indirect value to the environment.

The premise of an IPM program is correct identification of and scouting for pests/beneficials, but the cornerstone is the economic threshold. It has been assumed by many that as commodity prices increase, thresholds decrease, e.g., fewer insects, less defoliation, etc. Though thresholds for many insects and crops are dynamic, that is factoring many variables, they are not based on a simple sliding scale. In other words, because the insect/crop/weather interactions are so complex the crop's yield may or may not be negatively impacted when certain numbers of plants/leaves/roots are removed. For example, the threshold of 250 soybean aphids/plant was developed over multiple years and locations, but during a time when the soybean market was ranging $5-6/bushel. However, the threshold variable that changes with the jump in commodity price is not number of aphids, but rather the days before spraying. Simply explained, at 250, the aphid population is anticipated (depending favorable aphid weather) to reach about 700 aphids/plant in 7 days, when economic yield reductions begin. According to the threshold under higher soybean prices, fields should be treated at 250/plant in 3-4 days rather than waiting a week. For a more eloquent explanation coauthored by Kevin Steffey and Mike Gray, University of Illinois extension entomologists, please refer to "Will Economic Thresholds for Making Insect Control Decisions Be Lower in 2008?"<http://www.ipm.uiuc.edu/bulletin/article.php?id=878>, (Issue 1, March 21, 2008) in "the Bulletin."

Insects can only be killed once. There is a disturbing trend for insecticide-coated, Bt-CRW seed to be planted with a soil insecticide. But "after all, corn is selling at $ ____/bushel (you fill in the price) and losing one kernel, much less one plant, per acre just might make the difference!" While you're at it, don't forget to rescue treat for cutworms, armyworms, billbugs, slugs, stalk borers, stink bugs, southern corn leaf beetle, corn borers (Bt-CB corn is only 99.999% effective), aphids, rootworm beetles, grasshoppers, woollybear caterpillars, Japanese beetle, earworms, western bean cutworm just to name a few. Oh wait, that was just the corn insects..let's reload for the soybean crop!

Folks that come to the *Pest&Crop* on a regular basis to get up-to-date information on pests, their development, and potential impact on our crops makes this effort worthwhile. I have been encouraged throughout the years by your questions, comments, and field updates as situations develop. I know that you're doing the job right. My rant above is directed more to those few that have let higher commodity prices cloud their pest decisions. Thanks to most of you for your continual support of IPM, keep up the good work. Happy Scouting!

Black Cutworm Moths Trickle In - (*John Obermeyer and Larry Bledsoe*)

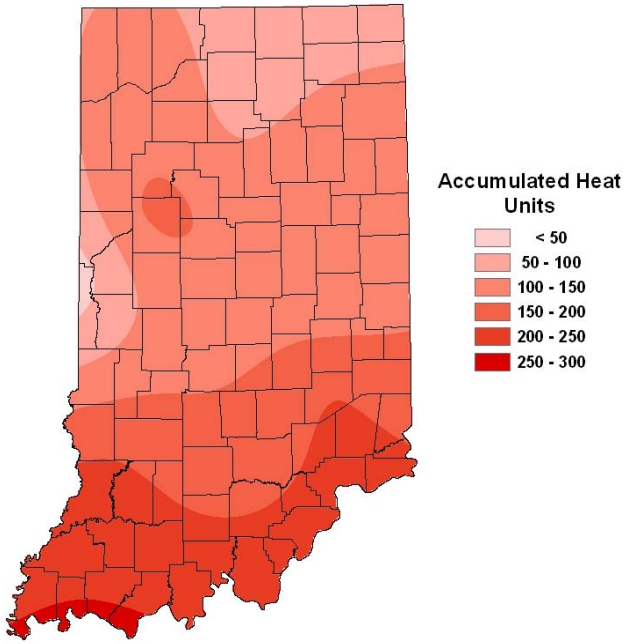
The lack of storm fronts from the Southwest the last week has slowed the arrival of black cutworm moths into the state. We appreciate the diligence of the pheromone trap cooperators, especially as we enter the next couple weeks, which typically yields intensive moth captures. That is when we begin to track heat unit accumulations for larval development and potentially cutting of the season's corn. Stay tuned, they're coming!

High Armyworm Moth Flight Reported in Kentucky – (*John Obermeyer*)

Doug Johnson, Kentucky Extension Entomologist, sent out the following email alert: "Capture of armyworm (aka "true" armyworm) moths in our IPM traps at Princeton is well above the five year rolling average, and very similar to counts obtained in 2006 when there was known damage in Kentucky. The Lexington trap does not show such and increase, but would be expected to be later than the Princeton trap due to difference in temperature."

By comparison, our black light traps (KY uses pheromone traps), see "Black Light Trap Catch Report," are typical for this time of year. We will keep you abreast of this situation over the next several weeks as moths continue to fly and larvae develop and begin feeding.

Accumulated Heat Units (Base 48)
Since January 1
For Alfalfa Weevil Development



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

Black Light Trap Catch Report - (*John Obermeyer*)

County/Cooperator	4/15/08 - 4/21/08													
	VC	BCW	ECB	SWCB	CEW	FAW	AW	VC	BCW	ECB	SWCB	CEW	FAW	AW
Dubois/SIPAC Ag Center														
Jennings/SEPAC Ag Center	0	0	0	0	0	0	1							
Knox/SWPAC Ag Center														
LaPorte/Pinney Ag Center	0	0	0	0	0	0	3							
Lawrence/Feldun Ag Center														
Randolph/Davis Ag Center	0	0	0	0	0	0	7							
Tippecanoe/TPAC Ag Center														
Whitley/NEPAC Ag Center	0	0	0	0	0	0	16							

VC = Variegated Cutworm, BCW = Black Cutworm, ECB = European Corn Borer, SWCB = Southwestern Corn Borer, CEW = Corn Earworm, FAW = Fall Armyworm, AW = Armyworm

Black Cutworm Adult Pheromone Trap Report
Week 1 = 4/10/08 - 4/16/08 Week 2 = 4/17/08 - 4/23/08

County	Cooperator	BCW Trapped		County	Cooperator	BCW Trapped	
		Wk 1	Wk 2			Wk 1	Wk 2
Adams	Roe/Mercer Landmark	2	7	Lake	Klein/Klein Farms	0	
Allen	Gynn/Southwind Farms	12	3	Marshall	Barry/Fulton-Marshall Co-op	3	3
Clay	Bower/Ceres Solutions, Brazil	0	2	Marshall	Misch/Pioneer		
Clay	Bower/Ceres Solutions, Clay City	2	0	Miami	Sweeten/Advanced Ag Solutions		
Clinton	Foster/Purdue Entomology	2	16	Newton	Ritter/Purdue CES	0	7
Daviess	Venard/Venard Agri-Consulting	4	5	Putnam	Nicholson/Nicholson Consulting	3	10
Elkhart	Willard/Crop Tech Consulting	1	2	Randolph	Boyer/DPAC	1	3
Fayette	Schelle/Fayette County	7	8	Rush	Doerstler/Pioneer Hi-Bred	5	0
Fulton	Jenkins/Fulton-Marshall Coop	0	4	Starke	Wickert/Wickert Agronomy Services	2	0
Gibson	Hirsch/Hirsch Family Farms	5	3	Sullivan	Bower/Ceres Solutions, Farmersburg	0	4
Green	Byarley/Pioneer-Worthington	4	2	Sullivan	Bower/Ceres Solutions, New Lebanon	1	7
Hamilton	Beamer/Beck's Hybrids	14	7	Sullivan	Bower/Ceres Solutions, Sullivan E	0	0
Jay	Shrack/RanDel	1	3	Sullivan	Bower/Ceres Solutions, Sullivan W	0	1
Jennings	Biehle/SEPAC	3	0	Tippecanoe	Obermeyer/Purdue Entomology	0	9
Knox	Hoke/SWPAC	0	0	Tipton	Johnson/Pioneer Hi-Bred	1	0
Knox	Bower/Ceres Solutions, Fritchton	0	0	Warren	Mroczkiewicz/Syngenta	1	5
Knox	Bower/Ceres Solutions, Oaktown	0	2	White	Reynolds/ConAgra Snack Foods	4	1
Knox	Bower/Ceres Solutions, Vincennes U	0	3	Whitley	Walker/NEPAC	11	6
Knox	Bower/Ceres Solutions, Westphalia	0	0				

Plant Diseases

Soybean Rust - (*Gregory Shaner*)

• The fungus is still confined to the Deep South

Although soybean planting has not gotten underway yet in Indiana, it's a good time to review what has happened this winter and the resources available for keeping abreast of soybean rust development of in the U.S. This year is the fourth season that the soybean rust fungus has been in the continental U.S. During the past two years, soybean rust made it up to Indiana, but not until mid October, much too late to do any damage. Many fungi that infect Indiana crops survive the winter on crop residue. In the following spring, these fungi produce spores on the residue, which infect the new crop. The soybean rust fungus can't do this. It needs a living host plant to produce spores. Crop maturity and killing frosts eradicate infections in much of the U.S. on soybean, kudzu, and other host species each autumn. The fungus survives the winter mainly on kudzu in the southern U.S. below the frost zone. Each year, the rust must migrate anew into the Midwest from overwintering sites in the South.

Winter was wetter this year in the South than it has been the previous three years. This allowed the fungus to persist over a broad area of the Gulf Coast. Fortunately, cold weather eradicated many of this overwintering sites. Rust that had been found in the Florida panhandle, Georgia, Alabama, Mississippi, Louisiana, and Texas disappeared when frosts in late February and early March killed the infected kudzu leaves. Rust has persisted in central and south Florida. Just six days ago, a few infections were found on kudzu in east Texas. Rust has also been reported from northeast Mexico.

There will be a system of soybean and kudzu sentinel plots in the U.S. again this year. Many soybean sentinel plots have been planted in southern states. We hope to start planting sentinel plots in Indiana soon. These plots are carefully monitored for soybean rust each week during the spring and summer.

There are two sources of up-to-date information about soybean rust that people in Indiana can use. For those who use the Internet, information about the status of rust can be found on the USDA PIPE Website, available at <http://www.sbrusa.net>. Going to this url brings up a U.S. map that shows where rust is (counties marked in red) and where people have scouted for rust, but did not find any (counties marked in green). From this page, users can choose specific states for more detailed information. If a county is red it does not necessarily mean that rust is rampant there. It just means that some rust was found—it could be just a few infections on a few leaves. It is important to read that commentary below the map to get a true picture of what is going on. Some third parties have been extracting these maps and using them in newsletters, without the commentary. This can give the impression that rust is causing more havoc than it really is.

Purdue also maintains a toll-free soybean rust phone hotline, which we update regularly during the growing season. The phone number is 866-458-RUST (7878).

It is impossible to predict at this time whether rust will reach Indiana this summer. Rust in Florida and Georgia probably poses little direct threat to Indiana because winds don't blow from there to here. Rust in the southern Mississippi Valley is of greater concern. The recent report of rust on kudzu in east Texas means that we need to watch developments there. If rust spreads from Texas into Louisiana and Mississippi and multiplies there on soybean or kudzu, a storm moving up the Mississippi and Ohio River Valleys could carry spores into Indiana.

Agronomy Tips

A Recipe for Crappy Stands of Corn* - (*Bob Nielsen*)

Every year, I get a lot of phone calls from folks wanting to know why their neighbor's fields of corn ended up with such poor uneven lousy-looking stands. Since some seem so ecstatic about this happening to their neighbors, I figured maybe they would like to know how to prepare a crappy stand of corn for themselves.

The following recipe will prepare one helping of a crappy stand of corn. Add more acreage as desired.

Ingredients:

- One (1) field, level and poorly drained.
- One (1) or more hybrids of your choice, but preferably ones with poor seed quality and low vigor.
- Do NOT add any starter fertilizer to the recipe.
- Add a dash of seed rot or seedling blight organisms.
- Add a pinch of wireworms or seedcorn maggots.
- Plenty of spring tillage to maximize soil compaction, though one pass with a disc will suffice if the soil is "on the wet side" when worked.
- Flavor with amide or growth regulator herbicides as desired.
- Add minimum of 0.5 to 1.0 inch of rain per week after planting to maintain saturated soil condition.

Mix well and plant early or any time before soils have consistently warmed to more than 50oF. Maintain average daily soil temperatures at 50oF or less for three weeks or more after planting. Plant "on the wet side" to ensure good sidewall compaction. Plant either excessively deep or excessively shallow. Plant as fast as you possibly can to ensure uneven seed drop. For best results, follow corn with corn, especially with minimal fall tillage. Top off with a thick soil crust and serve cold.

Will serve 6 people (farmer, fertilizer & ag chemical dealer, industry tech rep, seed dealer, county agent, university specialist) and amuse the entire neighborhood.

***Disclaimer:** This recipe is provided "tongue in cheek" as a reminder that stand establishment is one of the most important phases of the entire corn growing season. Success or failure during stand establishment impacts not only final plant population but also ear size determination once the crop moves into the rapid growth phase. Let's be careful out there!

Nitrogen Loss Conditions Approaching – (*Jim Camberato and Brad Joern*)

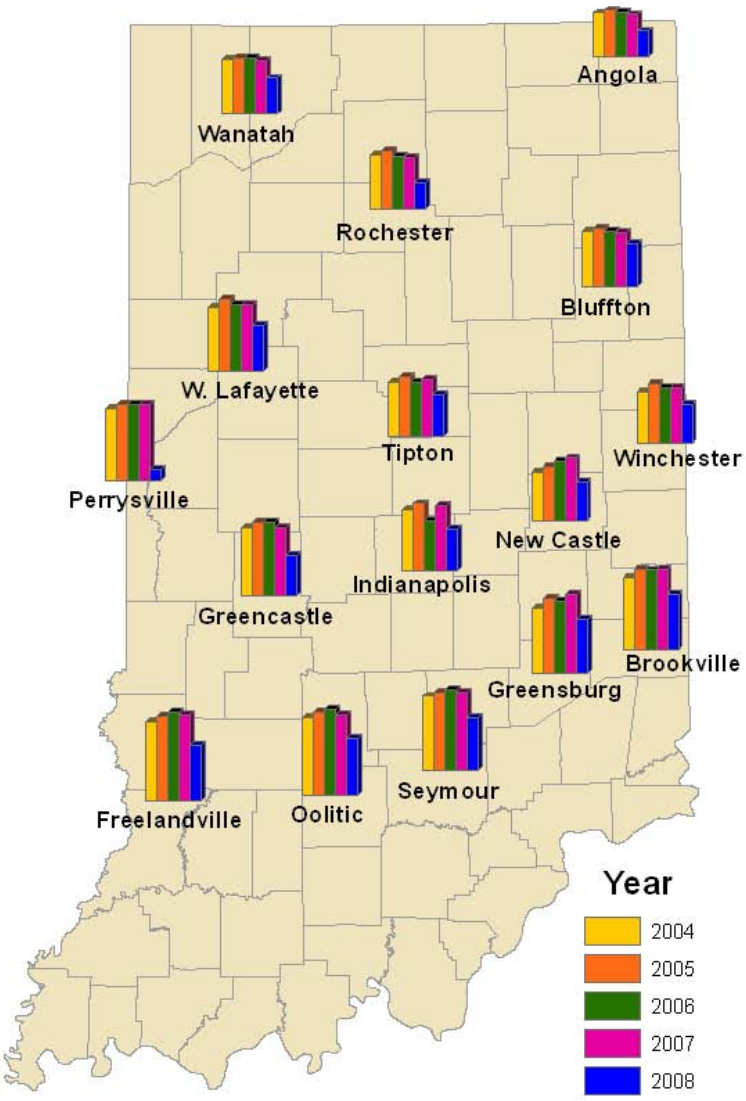
Farmers that applied anhydrous ammonia (AA) in the fall for corn in northern Indiana are wondering how much nitrogen (N) they may have lost due to the heavy rains and flooding that occurred over winter. Previous research has shown that N loss from fall-applied AA can range from 0 to 50%. The amount of loss depends on how much of the fertilizer ammonium has been converted to nitrate prior to saturated soil conditions. The conversion to nitrate is dependent on soil temperature and moisture conditions since application, whether or not a nitrification inhibitor was used, and soil drainage properties. Since monitoring of N loss in the field is prohibitively expensive, the best we can usually do is estimate the potential for loss from soil temperature and rainfall records. From this type of analysis we concluded that little N loss has likely occurred to date from AA that was applied in northern Indiana in the last week of October or later. Although the news is good now, it is too early to celebrate because we are just entering the time where N loss typically occurs.

The conversion of ammonium to nitrate increases with increasing temperature, requiring 8 weeks at 45 ^{o}F but only a couple of weeks at 60 ^{o}F. Soils just began exceeding 50 ^{o}F in the Lafayette and Muncie areas around April 1st and in the Valparaiso and Fort Wayne areas about April 10th. The last couple of warm days have resulted in soil temperatures nearing 60 ^{o}F. With continued warm temperatures most of the fall or spring-applied N (without a nitrification inhibitor) will soon be in the nitrate form. This nitrate-N will be susceptible to leaching in sandy soils or denitrification in poorly-drained soils if rainfall is excessive. So if you have already applied your nitrogen, rainfall during the next four to six weeks will determine how much is lost.

If nitrogen has not yet been applied, typically the best way to protect it from loss is to sidedress either AA or 28% urea-ammonium-nitrate. The most efficient preplant application is AA with a nitrification inhibitor. Polymer-coated and other slow-release nitrogen fertilizers have begun gaining commercial acceptance in the last few years but research with these products to establish their value relative to more traditional fertilizer practices is just beginning. If you are interested in these new products it would be wise to conduct some trials on your farm to test their performance.

Weather Update

Accumulated Growing Degree Days (86/50) Since January 1



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