



Purdue Cooperative Extension Service
USDA-NIFA Extension IPM Grant

August 31, 2012 - Issue 23

In This Issue

Insects, Mites, and Nematodes

- Tiny, White Worms in Ears
- Black Light Trap Catch Report

Plant Diseases

- VIDEO: Aspergillus Ear Rot - Identification and Scouting Tips
- VIDEO: Aspergillus Ear Rot - Screening for Aflatoxin
- Symptoms of Soybean Vein Necrosis Linked to a New Tospovirus

Agronomy Tips

- VIDEO: Effects of Stress on Soybean Pod Development
- VIDEO: Later Season Soybean Growth Stages
- Cover Crops Following the Summer 2012 Drought

Weather Update

- Moisture and Temperature Accumulations

Insects, Mites, And Nematodes

Tiny, White Worms in Ears – (John Obermeyer)

Pest managers looking for ear damage in fields have been seeing some very small, whitish worms. Often, these “worms” (actually grubs) are found in or around a plant wound site, which may or may not have been insect-induced. It is likely that these individuals are finding one of several sap beetle larvae, the most common being the familiar picnic beetle. These beetles, and their larvae, are commonly found in and around damaged and decomposing tissue. They are secondary invaders and will feed on decomposing, fermenting plant material and the sugars produced during this process (this is why they are attracted to beer, wine and other fermentation products). The beetles lay eggs in this rotting material (e.g., a damaged ear tip) so that the larvae have a food source to take them through their development. They are not considered pests, only “mopping” up a previous mess.



Sap beetles and larvae feeding in earworm wound site

Black Light Trap Catch Report - (John Obermeyer)														
County/Cooperator	8/14/12 - 8/20/12							8/21/12 - 8/27/12						
	VC	BCW	ECB	WBC	CEW	FAW	AW	VC	BCW	ECB	WBC	CEW	FAW	AW
Dubois/SIPAC Ag Center	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Jennings/SEPAC Ag Center	0	0	0	0	7	0	1	0	0	0	0	12	0	0
Knox/SWPAC Ag Center	0	0	0	0	12	0	0	0	0	0	0	9	0	0
LaPorte/Pinney Ag Center	0	0	0	0	0	0	0							
Lawrence/Feldun Ag Center	0	0	0	0	1	0	0	0	0	0	0	8	0	1
Randolph/Davis Ag Center	0	0	0	0	9	0	2	0	0	0	0	10	0	1
Tippecanoe/TPAC Ag Center	0	0	0	0	162	0	2	0	0	0	0	56	0	0
Whitley/NEPAC Ag Center	0	0	0	0	1	0	1	0	0	0	0	4	0	0

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

Plant Diseases

VIDEO: Aspergillus Ear Rot - Identification and Scouting Tips - (Kiersten Wise and John Obermeyer)

Aspergillus ear rot can be found in cornfields across Indiana. This disease is present at low levels in some fields, and it is important that growers be aware of how to scout for and identify the disease in order to reduce the impact of

the disease and the resulting mycotoxin, aflatoxin, on grain quality. More information about Aspergillus ear rot can be found at: <http://www.extension.purdue.edu/extmedia/BP/BP-83-W.pdf> , and at the Purdue Managing Moldy Corn website: <http://www3.ag.purdue.edu/extension/cornmold/Pages/default.aspx>.



VIDEO: Aspergillus Ear Rot - Screening for Aflatoxin
- (Charles Woloshuk and John Obermeyer) -

Aspergillus ear rot is being detected in stressed corn this year. Grain elevators are commonly screening harvested corn with a black light for fluorescence, which may signal the presence of the fungus *Aspergillus flavus* and its production

of aflatoxin. This video describes the screening process. A conclusive, and quantitative, test for the presence of aflatoxin is only available by chemical testing. More information about aspergillus ear rot, aflatoxin, testing, and FDA action levels can be found in Purdue Extension Publication BP-83-W, *Aspergillus Ear Rot*, which can be downloaded at: <<http://www.extension.purdue.edu/extmedia/BP/BP-83-W.pdf>>



Symptoms of Soybean Vein Necrosis Linked to a New Tospovirus – (Gail Ruhl and Kiersten Wise) -

A soybean sample exhibiting symptoms suggestive of a new disease caused by soybean vein necrosis virus was submitted to the PPDL for diagnosis earlier this month. The sample was sent to Agdia, Inc for virus testing. Molecular test results confirmed the presence of a tospovirus and we are now awaiting sequence confirmation that the tospovirus detected is that of the newly identified tospovirus known as Soybean Vein Necrosis Virus (SVNV). Symptoms caused by this virus include light green patches or mottled green and brown speckled areas associated with veins (Figure 1). These symptoms appear during mid to late summer. As the season progresses, affected leaf tissue may die, resulting in a scorched appearance on severely affected plants. Symptom severity appears to be variety-dependent. Symptoms may be confused with drought stress or ACCase herbicide injury (Figure 2).

These symptoms have been observed on soybeans for many years across the Mid-South and Midwest. However, it was not until 2008 that Dr. Ioannis Tzanetakis at the University of Arkansas discovered a new tospovirus in symptomatic leaf tissue collected in TN that was subsequently named soybean vein necrosis virus (SVNV). **SVNV has been reported in twelve states, including AR, DE, KY, KS, IL, MD, MO, MS, NY, PA, TN and VA.**

Tospoviruses are spread by thrips and although it is almost certain that thrips are vectors of SVNV, it is not known which of the thousands of species may transmit the virus to soybean. Currently, Dr. Tzanetakis and doctoral student Jing Zhou are working with plant pathologist Reza Hajimorad at the University of Tennessee and others to learn more about the association between this tospovirus and the vein necrosis observed on soybean foliage, the host range of the virus, potential vectors and impact on soybean yields.

At this point in time we do not recommend that growers change soybean production practices in response to detection of SVNV. For now, we will continue to keep an eye on this disease, and assess its potential impact before making future management recommendations. We encourage growers and consultants to inspect any still-green soybean plants for possible symptoms of SVNV and to send images of suspect symptoms of soybean vein necrosis to Kiersten Wise at kawise@purdue.edu.



Figure 2: Lipid synthesis inhibitor (ACCase) herbicide injury symptoms on soybean may be confused with SVNV symptoms.

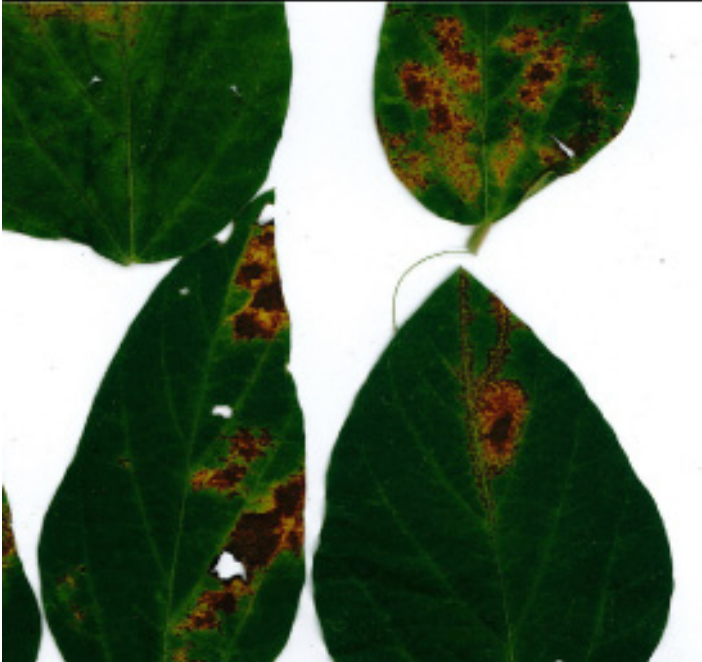


Figure 1. Symptoms of vein necrosis on leaves that tested positive for the presence of a Tospovirus

Agronomy Tips

VIDEO: Effects of Stress on Soybean Pod Development - (Shawn Casteel and John Obermeyer) -

Late season scouting of soybean is important to assess pest pressures, to determine disease presence, and to estimate soybean yield. Plant development during the first

two-thirds of the growing season can be evaluated during later trips as well. Drought stress has caused limited pod development on the lower one-third of many soybeans and even caused pods to develop only one seed per pod. We review some of the impacts of drought stress on flowering, developing pods, and seed formation.



VIDEO: Later Season Soybean Growth Stages - (Shawn Casteel and John Obermeyer) -

Soybean development (bloom and pod set) has been approximately one week ahead of the past five years, but one week behind previous drought years of 1988 and 1991. The later stages of development, seed fill and maturation, will depend on the weather. Soybeans that received rain in late July and early August were able to retain young pods until more rain came. If rain continued in August, these soybeans will continue to retain the developing pods, increase seed size, and mature near a normal calendar period. However,

limited rain in August will hasten maturation and leaf drop. The distribution, timing, and the quantity of rain is variable so the question has been asked what will this rain mean for my soybeans. The answer lies in the timing of the rain in relation to soybean development and soil moisture status. Most soybeans have entered the later growth stages – R5 (beginning seed) to R6 (full seed) over the past couple of weeks. Rainfall over these weeks are critical for pod retention and seed fill with more emphasis on pod retention during R5 (duration of ~15 days) and seed fill in R6 (duration of ~20 days) this season. We review the later growth stages of R5, R6, R7 (beginning maturity) and R8 (full maturity).



Cover Crops Following the Summer 2012 Drought

- (Eileen Kladviko) –

Why cover crops after drought?

The drought of 2012 has been the worst in many decades and will result in poor crop yields or crop failures across wide areas of Indiana and the Midwest in general. Besides the obvious impacts on crop yields, there are other effects of the drought that farmers should consider as they look ahead to this fall and next season. Fall-planted cover crops would be a good investment for many farmers this year, to benefit both their own farms and regional water quality.

For corn fields with poor yields this year, there will likely be much residual nitrate remaining in the soil at harvest time. This nitrate is subject to leaching out the bottom of the root zone during the fall, winter, and early spring. Although the soil is dry from this summer, the rain has begun to return, and typical precipitation in November through April will leach most of the nitrate below the root zone. These amounts of nitrate lost will likely be much larger this year than usual, leading to large nutrient loading to local waters and eventually to the Mississippi River and Gulf of Mexico. Numerous studies have shown the highest N losses in drainage waters after dry years.

But for farmers who lose the residual N, they are also losing the opportunity to trap that N and keep it in their fields for subsequent crop use. Cover crops are an excellent practice to scavenge residual N and recycle it through their plant biomass (shoots and roots). As the cover crops decompose next year, some of the N taken up by the cover crops will be released for use by the next cash crop, and some will go towards building soil organic matter. The amount of N uptake this fall and the amount of release next season depends on many factors including amount of residual N in the soil currently, the type of cover crop, amount of growth this fall (and spring, if winter –hardy cover crop), the stage of the cover crop at time of termination, and the decomposition rate of the cover crop in the spring.

This is precisely the type of year when a cover crop is needed, to trap the much larger amount of residual N that will be present after the poor (corn) crop. Cover crops will help the farmer recoup part of the fertilizer N investment from this season, and will provide some benefits in improving soil organic matter and soil biological activity. Poor cash crop yields also mean less crop residue returned to the soil, so cover crops can offset some of that loss, protecting against soil erosion and providing food for soil organisms. Although the emphasis is on cover crops after corn due to high residual N this year, cover crops will also be very useful after soybeans for adding organic matter and trapping N released by decomposing soybean residues, similar to benefits in normal rainfall years.

Cover crop selection

Now that the rains have started again in most parts of the state, cover crops should be able to get established rea-

sonably well. Several resources to help with cover crop selection include the Midwest Cover Crops Council Selector Tool (**ref. #1**), used for your county, the MCCC Cover Crops Field Guide (**ref. #2**), and the NRCS Seeding Tool (**ref. #3**). If the main focus of the cover crop is to scavenge N and build soil organic matter, then grasses such as oats, cereal rye, or annual ryegrass, perhaps mixed with oilseed radish, are good options. If fall grazing is desired, then turnips or crimson clover could be mixed with the oats and cereal rye. Farmers need to consider their next cash crop and have a plan for cover crop termination in the spring, as an important step before seeding cover crops this fall. Careful spring management is essential if cover crops are to be beneficial to the farmer and not pose major difficulties in planting the next crop.

The amount of N scavenged by these cover crops is difficult to predict but may be in the 50 to 100 lb N/acre range in a year like this one. Although the amount of N released by the cover crop for next year's crop is also difficult to predict, it may potentially be up to half of the N in the above-ground biomass, if the cover crops or cover crop mixture have a low C:N ratio and are terminated while in the vegetative state. A pre-sidedress nitrate test (PSNT) would be one way to help determine whether sidedress N applications could be reduced next year. See **ref. #4 and 5** for more details on cover crops, N cycling, and PSNT testing procedures and interpretations.

Herbicide carryover and rotation restrictions

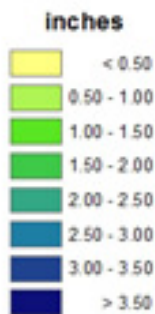
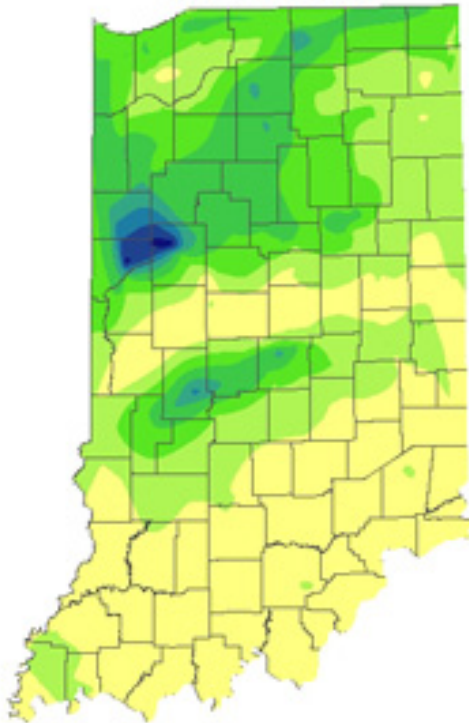
Some herbicides used for the summer crop 2012 may cause establishment problems for some cover crops. There is little research on the effects of many herbicides on the commonly grown cover crops. The herbicide label lists restricted planting intervals that should be followed if grazing or harvesting the cover crops is planned. More information can be found in "Herbicide rotation restrictions for cover crops and fall forage" (**ref. #6**).

References

1. Midwest Cover Crops Council Selector Tool, <<http://www.mccc.msu.edu>>, choose selector tool from left sidebar.
2. Midwest Cover Crops Council, "Cover Crops Field Guide", 2012, available from Purdue Extension Education Store, <<http://www.the-education-store.com>>, or phone 1-888-EXT-INFO.
3. NRCS On-line Seeding Tool and Technical Notes <<http://www.in.nrcs.usda.gov/news/publications/CoverCrop-SeedingTechnotes.pdf>>, or contact your local NRCS office.
4. Eileen Kladviko. "Cover crops for nitrogen management", <<http://www.ag.purdue.edu/agry/extension/Documents/CoverCropsNitrogen.pdf>>
5. Sylvie M. Brouder and D.B. Mengel. The presidedress soil nitrate test for improving N management in corn, <<http://www.agry.purdue.edu/ext/pubs/AY-314-W.pdf>>
6. Travis Legleiter, Bill Johnson, and Keith Johnson. "Herbicide rotation restrictions for cover crops and fall forage", <https://ag.purdue.edu/btny/weedscience/Documents/Rotation_Restrictions.pdf>

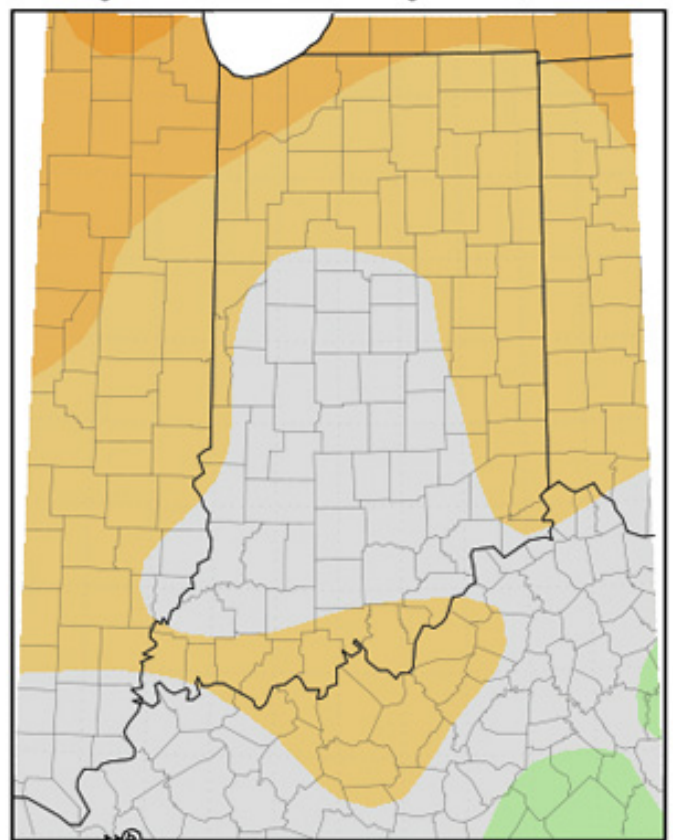
Weather Update

**Total Precipitation
August 23-29 2012
CoCoRaHS Network
(468 stations)**



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

**Average Temperature (°F): Departure from Mean
August 22, 2012 to August 28, 2012**



Mean period is 1981-2010.



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