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Issue 10, June 10, 2016 • USDA-NIFA Extension IPM Grant

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Insects, Mites, and Nematodes

Agronomy Tips

Weather Update

Diagnosing a Troubled Cornfield – *(John Obermeyer)*

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- **Diagnoses of a field problem requires a hunger for knowledge.**
- **Patience and thorough analysis may pinpoint to specific or multiple interacting factors.**
- **Experienced gained in challenging fields will be beneficial in the future.**

“Eliminate all other factors, and the one which remains must be the truth,” Sherlock Holmes by Sir Arthur Conan Doyle. This is easier said than done when dealing with poorly growing corn in areas of a field. Symptoms often include stunting, discoloration, and leaf rolling. As one begins to investigate, the possibilities seem endless.

Still, into our second week of June, some cornfields appear to be “growing backward,” as one producer described it. Numerous samples sent to the Purdue Plant & Pest Diagnostic Lab and picture emails have revealed an assortment of corn problems, mostly linked to this spring’s challenging weather conditions. Seedling blights are still being implicated in 3-5 leaf stage corn. There are “critters” that take advantage of weak and/or dying plants. When found, they are often accused of being the culprit for a poor or uneven stand. Here is a sampling:

Millipedes are wireworm-like arthropods (like insects, they belong to the Phylum Arthropoda- means “jointed foot”), having two pairs of legs per body segment. They have become more prevalent as no-till production becomes more widespread. They are often found in large numbers, but are rarely a pest. This is because they typically feed as scavengers, feeding on dead or decaying materials often associated with seedling blights. Several pest managers have reported numerous millipedes in and around corn kernels/sprouts that have been in the ground for two or more weeks. These kernels were probably the victims of pathogens of some kind (bacteria/fungi) and opportunistic millipedes were merely acting as the “clean-up crew” and hollowing out kernels that were in early stages of decay.

Millipedes found around a "challenged" corn root.

Juvenile ("baby") earthworms and potworms are closely related and common animals found in soils. They are small, generally colorless, and often less than 1/4 inch long. These worms feed on damaged and decaying plant remains, not live tissue. Therefore they are closely associated with the decaying plant parts and surrounding soil and sometimes wrongly accused of damaging seedlings – in fact, they usually arrive after the seed is dead. In fact, their mouthparts are incapable of causing damage to live tissue – they don't have "teeth" and instead are specialized to suck up partially-liquefied material. The point of all this is to reiterate that pest managers should keep an open mind when diagnosing field problems. As one submitter confessed, he was so convinced that it was an insect problem and therefore looked for anything moving when he couldn't find grubs or wireworms.

Potworms doing cleanup around a rotted seed.

Many other critters, e.g., mites, symphylans, and springtails, have been observed on or around rotting seeds/seedlings. They are small, some fast moving, and certainly unfamiliar to most. They are not causing the poor emergence/growth, but taking advantage of weak and dying plants (including dead weeds and crop debris from previous years) in various stages of decay, as well as the hospitable environment supplied by atypically wet soils.

Happy scouting!

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Armyworm Pheromone Trap Report

County/Cooperator:	Dubois/SIPAC Ag Center
Wk 1	0
Wk 2	0
Wk 3	348
Wk 4	258
Wk 5	11
Wk 6	6
Wk 7	22
Wk 8	44
Wk 9	35
Wk 10	5
Wk 11	
Wk 12	
Wk 13	

County/Cooperator:	Jennings/SEPAC Ag Center
Wk 1	0
Wk 2	0
Wk 3	15
Wk 4	18
Wk 5	9
Wk 6	1
Wk 7	9
Wk 8	0
Wk 9	1
Wk 10	2

Wk 11	
Wk 12	
Wk 13	
County/Cooperator:	Knox/SWPAC Ag Center
Wk 1	0
Wk 2	6
Wk 3	197
Wk 4	63
Wk 5	17
Wk 6	39
Wk 7	22
Wk 8	22
Wk 9	19
Wk 10	30
Wk 11	
Wk 12	
Wk 13	
County/Cooperator:	LaPorte/Pinney Ag Center
Wk 1	0
Wk 2	25
Wk 3	317
Wk 4	296
Wk 5	63
Wk 6	149
Wk 7	121
Wk 8	29
Wk 9	10
Wk 10	42

Wk 11	
Wk 12	
Wk 13	
County/Cooperator:	**Lawrence/Feldun Ag Center**
Wk 1	4
Wk 2	97
Wk 3	155
Wk 4	76
Wk 5	42
Wk 6	21
Wk 7	14
Wk 8	14
Wk 9	15
Wk 10	40
Wk 11	
Wk 12	
Wk 13	
County/Cooperator:	**Randolph/Davis Ag Center**
Wk 1	0
Wk 2	0
Wk 3	0
Wk 4	24
Wk 5	122
Wk 6	162
Wk 7	101
Wk 8	14
Wk 9	11
Wk 10	29

Wk 11	
Wk 12	
Wk 13	
County/Cooperator:	Tippecanoe/Meigs
Wk 1	0
Wk 2	4
Wk 3	141
Wk 4	101
Wk 5	45
Wk 6	50
Wk 7	55
Wk 8	114
Wk 9	32
Wk 10	16
Wk 11	
Wk 12	
Wk 13	
County/Cooperator:	Whitley/NEPAC Ag Center
Wk 1	7
Wk 2	21
Wk 3	619
Wk 4	1,091
Wk 5	376
Wk 6	682
Wk 7	612
Wk 8	173
Wk 9	78
Wk 10	56

Wk 11
Wk 12
Wk 13

Wk 1 = 3/31/16 - 4/6/16; Wk 2 = 4/7/16 - 4/13/16; Wk 3 = 4/14/16 - 4/20/16; Wk 4 = 4/21/16 - 4/27/16; Wk 5 = 4/28/16 - 5/4/16; Wk 6 = 5/5/16 - 5/11/16; Wk 7 = 5/12/16 - 5/18/16; Wk 8 = 5/19/2016 - 5/25/2016; Wk 9 = 5/26/2016 - 6/1/2016; Wk 10 = 6/2/16 - 6/8/16

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Subpar Soybean Stands? – *(Shaun N. Casteel)* -

This planting season has been another trying one for many of the state. Over the month of May, we were waiting for field conditions to improve enough for field preparations and planting. The calendar and workload weighed on many, so fields were worked a touch early and soybeans were planted in less than ideal conditions. Soybean stands are subpar in countless fields from “mudding in” (open seed slots) to “clodding in” (fields worked wet and seeds are in contact with clods instead of soil, Figures 1 and 2) with no more rain. While other fields dried out by Memorial Day, and soybeans were planted into decent seedbeds just to have a pounding rain within a day to prolong the dampening off conditions followed by hot temperatures to form crust.

Figure 1. Spotty stand of soybeans due to cloddy seedbed conditions followed by limited rainfall to make up for the poor seed-to-soil contact.

Figure 2. Uneven emergence of soybean due to variable seed depth under cloddy soil conditions and lack of moisture.

Needless to say, many soybean fields are in dire straits as we assess stand establishment. Our normal goal is 100,000 to 120,000 plants per acre to optimize yield. However, we should not be quick to replant or overseed into an existing stand if the field is less than 100,000. Obviously, the distribution of plants at suboptimal stands will factor into the decision to replant. Approximately 70,000 plants per acre is the gray area for replanting. If there are pockets that are much lower than 70,000 plants per acre, those can be filled in.

Figure 3. Hula hoop method determined stand of 90,000 plants/acre. No replant needed.

Stand assessments need to count emerged soybeans AND the potential seeds or seedlings that may emerge. The below ground factor and weather forecast will play into these decisions. If the missing plants are due to seeds that have rotted below ground or the hypocotols and cotyledons have snapped off, then the stand is what you have to work with in that field. Whereas, seedlings near the soil surface that need a softening rain could be the reinforcements that is needed for subpar stands.

The replanting operation will cause damage to the established plants (nearly 20% stand loss when overseeding with a 30-inch planter at an angle) and you still at the mercy of Mother Nature to have the replanted seed establish plants. Young soybean plants (VC stage, cotyledons and unifoliates) are sensing light quality to determine the need for branching out. Basically, if a soybean plant has few neighboring plants (little to no shading), branches are initiated to fill the void literally and produce pods on those branches. As we get later into June, these soybeans in subpar stands will have minimal branching due to "pushes" from the photoperiod. Replanting into stands of soybeans that are V2 (two unrolled trifoliates) often become more cosmetic early if the overall stand was above 70,000 plants per acre.

Replanting recommendations will be field specific, but factors to consider are seeding rate, maturity group, planting pattern, and weed control (see Late Planting and Replanting of Soybean).

VIDEO: Drilled rows: Hula hoop

VIDEO: 15-in Rows: Linear method

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Late Planting and Replanting of Soybean – *(Shaun N. Casteel) -*

Many areas still need to plant soybeans for the first time while others may need to replant or may need to replant (see Subpar Soybean Stands). We need set the stage for the best possible return on late plantings of soybean. If you are in the situation of planting soybeans in June, you need to consider your seeding rates, row width, and maturity group. Soybeans trip their reproductive trigger (flowering) as the day length shortens, which occurs much quicker with delayed plantings.

SEEDING RATE – Planting in the first weeks of June require 10 to 20% increase in seeding rates (~15,000 seed/acre increments for each week of delay). The higher seeding rates will help to facilitate quicker row closure and higher pod height with fewer days to flowering.

My starting recommendations for normal planting operations in April and May are: 120,000 to 140,000 seeds/acre for planters (15 to 30”), 140,000 to 160,000 seeds/acre for air seeders (~15”), and 160,000 to 180,000 seeds/acre.

If you typically plant 140,000 seeds/acre in 15-inch rows, you need to bump the seeding rate to ~155,000 seeds/acre in the first week of June then to ~170,000 seeds/acre in the second week of June, so forth and so on. Soybeans will produce fewer main-stem nodes (attachment points of trifoliates and ultimately pods) as planting is delayed, so the increasing seeding rates will also help to overcome the shortfall in node production.

ROW WIDTH – If you plant 30-inch rows, you need to look into the possibility of planting narrower rows with the limited time to flowering. We typically see a yield advantage of 5 to 10% for soybeans planted in narrow rows (15 inches or less) compared to 30-inch rows, and this difference will be even more prominent in late planting situations. Wide rows (30-inch) take nearly 25 days longer and 40 days longer to canopy compared to 15-inch and 7.5-inch rows, respectively. This delay will certainly decrease the yield potential as canopy closure would occur well after reproductive initiation.

Replant Consideration. **However, you may consider a 30-inch planter to limit the damage to the existing stand of soybeans in a replant/overseeding situation. Planting at an angle will likely limit the amount of damage. In some row configurations, replanting with a GPS-guided offset will also limit mechanical damage to existing stand.**

MATURITY GROUP – Full-season varieties for your respective regions should be planted until June

15 for the northern quarter, June 20 for the central half, and June 25 for the southern quarter of Indiana. Varieties should be dropped a half maturity group after these dates and planted for another two weeks before we consider other alternatives. If you are in a very late planting situation, I suggest back-dating 90 days from the typical fall freeze in your region to determine if you have enough growing season to mature a soybean crop. My hope is that you will not need to make that determination.

Action	
Northern IN	
Central IN	
Southern IN	
Stay the course until:	
June 15	
June 20	
June 25	
Then, drop 0.5 MG and plant until:	
June 30	
July 5	
July 10	

Replant Consideration. Variety selection for replanting can be difficult, because we ideally want the whole field to mature at the same time to ease harvest operations. General rules of thumb include that a 3-week delay in planting is about 1-week delay in maturity. A shift in 1.0 maturity group (MG) unit is approximately 7 to 10 day difference in maturity. Again, these are given as guidelines and not absolutes. Field conditions in August to September can also cause hasten (hot and/or dry) or extend (adequate soil moisture such as those wet pockets that are replanted) the reproductive period, which influence maturity timeline.

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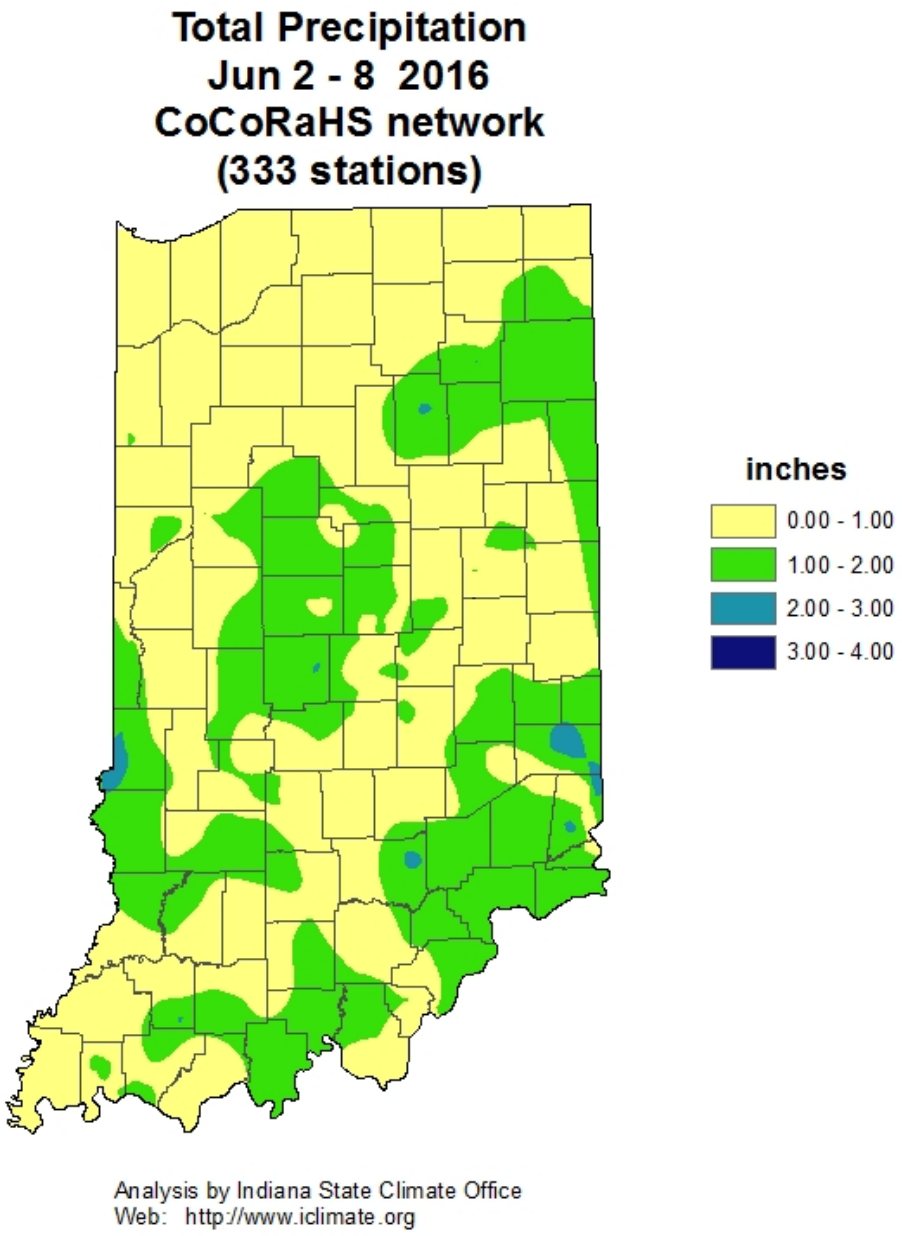
WEATHER UPDATE

Precipitation


Total Precipitation
Jun 2 - 8 2016
CoCoRaHS network
(333 stations)
inches
0.00 - 1.00
1.00 - 2.00
2.00 - 3.00
3.00 - 4.00
Analysis by Indiana State Climate Office
Web: http://www.iclimate.org

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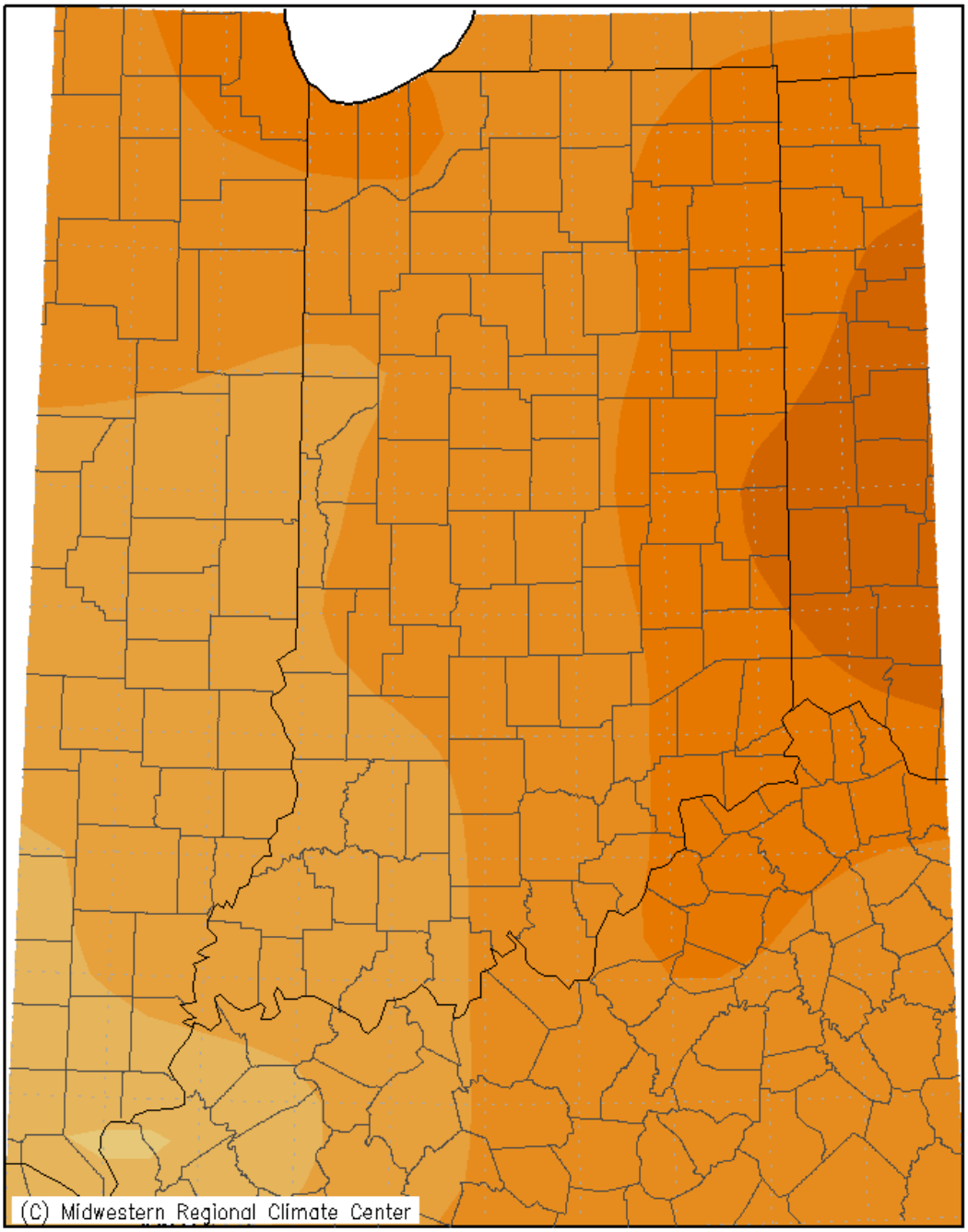
Temperature

Average Temperature (°F): Departure from Mean
May 31, 2016 to June 6, 2016



Mean period is 1981–2010.

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

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THANKS FOR READING

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