In This Issue

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Editor: Tammy Luck | Department of Entomology, Purdue University, 901 W. State St., West Lafayette, IN 47907

Japanese Beetle Season Begins…Early!

Authors: Christian Krupke and John Obermeyer

Locally, we found Japanese beetle adults on Monday, June 11, in field crops and flying around campus. This is certainly earlier than normal, as we typically think of them emerging more toward the end of June. Many areas in the state are now likely seeing this notorious pest in crops and around the home. It is just the beginning! Not surprising, as our May degree day accumulations were 50-60% above our long-term averages for the month. It may not have felt like it at times, but it was an atypically warm month of May in Indiana.

These adults are the result of eggs laid by female beetles last summer. After these eggs hatched, the grubs immediately begin to feed on a wide variety of roots and decaying organic matter in the soil. This fall feeding is typically not noticed and not economic damage. They continue feeding until cold temperatures prompt them to move deeper in the soil profile to overwinter. Early in spring, the surviving grubs return to near the soil surface to feed, and this is when they cause problems in field crops, turfgrass and other crops. There were questions about how well the grubs overwintered after the very cold temperatures the state experienced in early January…the same cold that ruined our peach crop this season. They were likely not impacted because they can move deep in the soil profile, beyond where the temperature fluctuates much. Now we will have the answer on their survivability as their numbers continue to build over the next several weeks.

Japanese beetles are generalists both as adults and larvae and will feed on more than 350 different species of plants. As adults they are especially fond of roses, grapes, smartweed, soybeans and other legumes, corn silks, flowers of all kinds, and overripe fruit. Beetle damage to cultivated crops is usually minimal and defoliation (leaf removal) on soybean typically looks much worse than it is, and is often most severe along borders, where “drive-by scouting” tends to occur. The beetles often congregate in several areas of a soybean field, feeding on and mating in the upper canopy. The beetles’ iridescent, metallic color also frequently catches the attention of those doing “windshield” field inspections. Closer inspection will often reveal that weeds (e.g. smartweed) have made fields even more attractive to the beetles. It has been years since we heard of treatable levels of adults in corn or soybeans, but stay vigilant. Happy Scouting!

Japanese beetle season returns.

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Armyworm Moth Second Flight Quite Impressive

Author: John Obermeyer

Take a gander at the “Armyworm Pheromone Trap Report.” The number of moths suddenly flying this week has us wondering where females will lay their eggs? The correct answer would be lush, dense grasses. Maybe grass pastures? The current growth stage of wheat is not likely to be attractive, nor are grassy cover crops, as they should have been terminated by now. A handful of times over the years, I have been sent pictures of “back 40” cornfields, planted very late that were completely denuded in late June. A surprise to the neglectful producer! Consider this an alert that the possibility of unique, late-damage from armyworm exists this season. The good news is that should humidity stay high, armyworm larvae are very susceptible to fungal pathogens. Therefore, Mother Nature may take care of this pest for the rest of the year. Happy Scouting!

Surprise damage from armyworm (*Photo Credit: Jeff Nagel*).

Armyworm in early stages of death by fungus.

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Armyworm Pheromone Trap Report

County/Cooperator	Wk 1	Wk 2	Wk 3	Wk 4	Wk 5	Wk 6	Wk 7	Wk 8	Wk 9	Wk 10	Wk 11
Dubois/SIPAC Ag Center	0	0	11	3	136	19	18	0	4	102	
Jennings/SEPAC Ag Center	0	0	2	5	8	1	0	0	3	70	174
Knox/SWPAC Ag Center	0	27	44	45	25	11	15	26	51	32	724
LaPorte/Pinney Ag Center	0	0	3	3	14	9	13	19	9	27	41
Lawrence/Feldun Ag Center	0	28	89	144	74	43	30	25	8	247	637
Randolph/Davis Ag Center	0	0	273	80	340	68	72	132	67	12	328
Tippecanoe/Meigs	0	0	1	5	5	23	0	1	7	40	622
Whitley/NEPAC Ag Center		0	22	22	86	94	9	17	27	30	1674

Wk 1 = 3/29/18-4/4/18; Wk 2 = 4/5/18-4/10/18; Wk 3 = 4/11/18-4/18/18; Wk 4 = 4/19/19-4/25/18; Wk 5 = 4/26/18-5/2/18; Wk 6 = 5/3/18-5/9/18; Wk 7 = 5/10/18-5/16/18; Wk 8 = 5/17/18 – 5/23/18; Wk 9 = 5/24/18-5/30/18; Wk 10 = 5/31/18-6/5/18; Wk 11 = 6/6/18-6/13/18

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Soybean Sulfur Solutions?

Author: Shaun N. Casteel

Over the last few years, we have been documenting some remarkable soybean yield responses (upwards of 13 bushels) to sulfur (S) in northwestern Indiana. I shared more details of these trials this winter and in various articles across the Midwest. We do have other sites across Indiana that have seen modest yield improvements (3 to 7 bushels) and other sites with no response. We have experimented with several products, rates, and scenarios, but we have not tried everything. I have received numerous calls and emails on the subject, so I want to provide some answers and leanings.

Is my field and soybeans responsive to sulfur?

My recommendation to answer this question is based on a set rate of S at the beginning of the season compared to no application. We have tested granular AMS (ammonium sulfate, 21-0-0-24S), MES10, and elemental S at various S rates at a S-deficient site. ***The most straightforward approach is to apply 15 to 25 lb S per acre with granular AMS*** (62.5 to 104 lb of AMS product per acre) depending on the applicators' performance and the option of blending other fertilizer. We are evaluating other sources this year such as K-Mag, gypsum, and ATS (ammonium thiosulfate, 12-0-0-26S). ATS is a source that we are testing in more depth this year. I think it could be a nice option in the burndown application or in a starter band if the planter was setup for it. I am worried about the leaf damage if ATS was applied foliarly, so we are looking at various rates, timings, and dilutions/carrier volumes.

Can I still apply granular AMS (or other S fertilizers) to emerged soybeans?

Ideally, the application of granular AMS (or one of the other granular S fertilizers that are moderately soluble) is made prior to soybean planting to reduce logistics and complications from tire compaction. However, the weather and field conditions were not fit for many of these applications this year. If you had to choose between timely planting of soybean or testing the S responsiveness, I would choose timely planting every time. ***The granular application of S fertilizers*** such as AMS, MES10, K-mag, and gypsum ***can still be applied to soybean plants (up to V4), but you will have to live with the tire damage.*** We have applied these materials up to V4 soybean plants and still seen good yield response. Though, the later the application of these granular materials will be less effective. Soybeans need the S early in its development. The fertilizer granules could cause some cosmetic damage to the leaves if they stick, so do not apply these materials when there is a dew or the soybean plants are wet from a recent rain.

Can I apply a foliar S fertilizer and see the same response?

The market is full of foliar fertilizers that have S as well as other nutrients. Most of these products have use rates that are very low in comparison to the potential S need in a S-deficient site. For example, one product has a use rate of 1 to 2 qt of product per acre which would only supply 0.25 to 0.5 lb S per acre. Our foliar S trials have been much, much higher. Our starting point was 5 lb S per acre, which is 10 to 20 times higher than most foliar fertilizer products. Again, many of these foliar fertilizer have other nutrients that cannot be applied in high of quantity, especially the micronutrients (i.e., potential micronutrient toxicity) or it is cost-prohibitive.

We have evaluated spray-grade AMS (finer particles and purer product, 21-0-0-24S) in foliar applications to soybean at V4, R2, R4, and R6 plus various combinations at 5 lb S per acre (21 lb of spray-grade AMS dissolved in 15 gallons per acre). This mix will take time to dissolve, so slowly mix and agitate the mixture. This application rate should also invoke concern (it is a "hot" rate). The likelihood of crop damage (leaf burn) is high if applied in hot and dry conditions and/or to older soybeans (R4 and later). ***The best responses were with the V4 and R2 applications*** (6 to 10 bushels in 2016, 4 to 7 bushels in 2017). Please note, these were applied as nutrient solutions alone and NOT tank mixed with herbicides, insecticides, or fungicides.

We are evaluating foliar S rates this year at V4 and R3, so a more definite answer will come this fall and winter. ***If soybeans are deficient in S, my leaning is that a foliar application of 3 to 5 lb S per acre may be warranted.*** In severe causes, a sequential application near V4 and R2 or R3 may also be warranted. At this point, I am assuming that granular fertilizer is not an option. Other fertilizer products are available that may be safer at higher rates (but they may be more expensive too). Again, we have not looked at ATS in foliar sprays so I cannot give a direction with it.

Other scenarios or concerns

Many other scenarios are possible: side-dressing, dribble or y-drop applications, tank mixes, fertigation, and more. Please use caution as you test and try them out, especially tank mixes. We did a few tank mixes last year with some fungicides and insecticides. We did notice crop phytotoxicity that lead to yield hits with some of those combinations. At this point, I am not making any recommendations on tank mixes. As always, please keep untreated strips for comparison throughout the season and with the combine. I highly suggest taking leaf samples to help document the S need/response. Soil samples will be good for site characterization. Sulfur is mobile in the soil, and there is not a routine soil analyses available to determine S needs.

No sulfur applied. Picture taken July 15, 2016 near LaCrosse Indiana.

20 lb. of sulfur applied per acre at planting with granular AMS. Picture taken July 15, 2016 near LaCrosse, Indiana in the same field as the untreated soybean.

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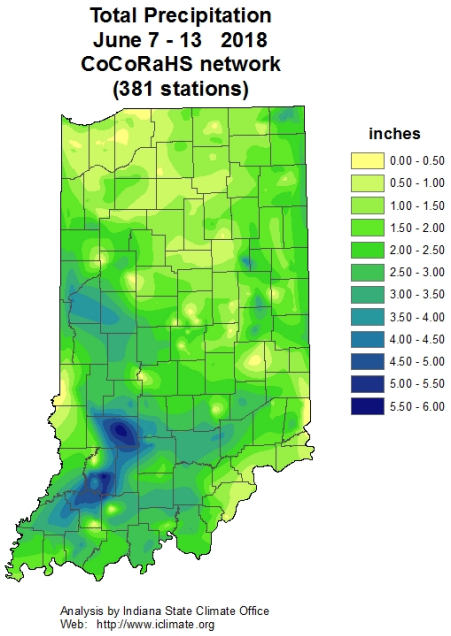
Total Precipitation June 7-13, 2018



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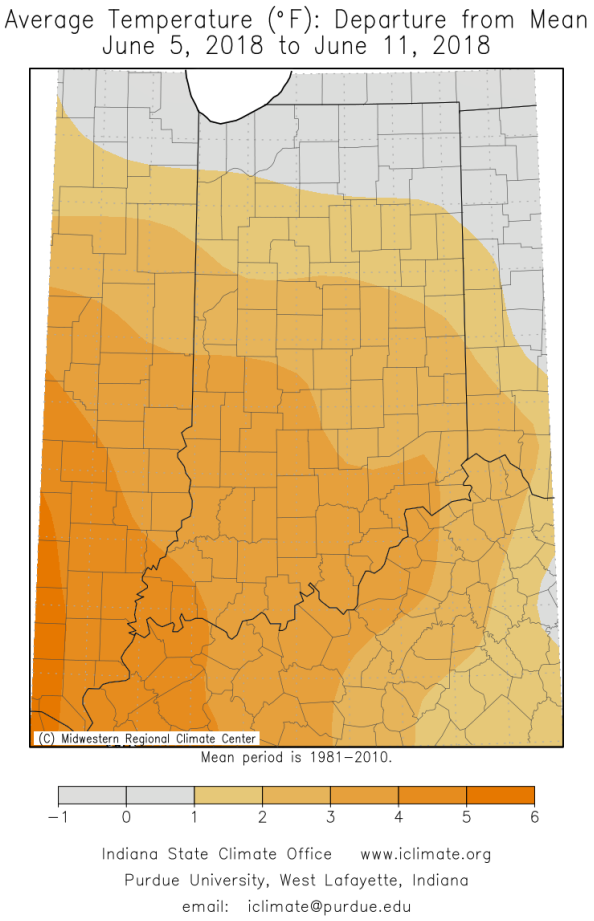
Average Temperature Departure from Mean June 5-11, 2018



Average Temperature Departure from Mean June 5-11, 2018