In This Issue

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

Armyworm, Something to Consider

Author: John Obermeyer

Armyworm moth captures have varied throughout the state (see "Armyworm Pheromone Trap Report"). As I observed last week in Tippecanoe County, when larvae are small, their damage is negligible and easily overlooked. Now, and for the next week or so, is when high-risk crops should be monitored. Moths prefer to lay their eggs on dense grassy vegetation (e.g., wheat, grass hay, and grass cover crops). Larval development, except in extreme northern counties, should now have advanced to the point that fields should be assessed for feeding damage.

Corn – Corn that has been no-tilled into, or growing adjacent to, a grass cover crop (especially cereal rye) should be inspected immediately for armyworm feeding. Hatched larvae will move from the dying grasses to emerging/emerged corn. Armyworm feeding, done at night, gives corn a ragged appearance, with feeding extending from the leaf margin toward the midrib. When larvae are numerous and/or large, damage may be so extensive that most of the plant, with the exception of the midrib and stalk, is consumed. A highly damaged plant may recover if the growing point has not been destroyed. If more than 50% of the plants show armyworm feeding and live larvae less than 1-1/4 inches long are numerous in the field, control may be necessary. Larvae greater than 1-1/4 inches consume a large amount of leaf tissue and are more difficult to control. If armyworm are detected migrating from border areas or waterways within fields, spot treatments in these areas are possible if the problem is identified early enough. Don't rely on Bt-corn for protection, as all are vulnerable to armyworm damage.

Wheat & Grass Pasture – Examine plants in different areas of a field, especially where plant growth is dense. Look for flag leaf feeding, clipped heads, and armyworm droppings on the ground. Shake the plants and count the number of armyworm larvae on the ground and under plant debris. On sunny days, the armyworm will take shelter under crop residue or soil clods. If counts average approximately 5 or more per linear foot of row, the worms are less than 1-1/4 inches long, and leaf feeding is evident, control may be justified. If larvae are present and they are destroying the flag leaves or the heads, treat immediately.

Forage grass damaged by small armyworm, ranges from leaf scraping to marginal leaf notches.

Completely defoliated wheat by armyworm larvae.

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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
Dubois/SIPAC Ag Center	0	0	11	3	136	19	18	0
Jennings/SEPAC Ag Center	0	0	2	5	8	1	0	0
Knox/SWPAC Ag Center	0	27	44	45	25	11	15	26
LaPorte/Pinney Ag Center	0	0	3	3	14	9	13	19
Lawrence/Feldun Ag Center	0	28	89	144	74	43	30	25
Randolph/Davis Ag Center	0	0	273	80	340	68	72	132
Tippecanoe/Meigs	0	0	1	5	5	23	0	1
Whitley/NEPAC Ag Center		0	22	22	86	94	9	17

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

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Reminder to Pay Attention to Surroundings and Check DriftWatch

Authors: Joe Ikley and Bill Johnson

Every year we get several cases of herbicide drift from burndown applications on homeowner trees, shrubs, flowers, and vegetables. This year has been no exception for these kind of drift complaints. What has been troubling to us this year is that we have received three separate drift complaints on landscape or vegetable nurseries within the last week. After spending a tremendous amount of time, resources, and effort on dicamba training over this past winter, it is a little disappointing to have multiple cases of drift onto specialty crops this spring. While dicamba has not been the culprit herbicide in these three cases, many of the same principles taught in training should apply to all herbicide applications, especially near high value crops. These investigations are currently ongoing, but we wanted to share what we have learned based on the submitted samples. For each case, we looked at wind data from the nearest weather station located at nearest Purdue Agricultural Center.

The first case involved suspected drift onto a certified organic nursery that is listed on DriftWatch. Based on information we were provided, it appears saflufenacil (Sharpen) was applied 700 feet away during a day where average wind speeds ranged from 5 to 16 MPH, with wind gusts over 10 MPH for most of the day. There was also 2,4-D injury on tomatoes in their hoophouse from an unknown source.

The second case involved 2,4-D drift onto a 1 acre landscape nursery that is not on DriftWatch. Out of two potential application dates we were given, both had average wind speeds between 5 and 10 MPH with wind gusts over 10 MPH for most of the day.

The third case had moderate to severe 2,4-D injury on several vegetable crops in a nursery that is listed on DriftWatch. The injured plants were located inside hoophouses and planted in the field. The suspected application was made on May 8th and 2,4-D was not listed as a product in the tank. May 8th was a day with light and variable winds all day, with potential inversions in the morning and evening. It is interesting to note that May 7th and May 9th were very windy in this location. We are currently not sure where the 2,4-D in this case came from.

All of these cases are dealing with some 2,4-D injury on specialty crops. 2,4-D is widely used in burndown applications across the state as it is still an effective and cheap option to add to any tank-mix. We also usually see 2,4-D injury resulting from applications made in high winds every year in the rush to get fields sprayed. While we expected to see drift cases again this year due to the delayed start to burndown applications and planting, seeing injury on three nurseries is not acceptable, especially given the fact that two are registered and located on DriftWatch. As these investigations are ongoing, we also cannot rule out volatility of 2,4-D as a potential source off target movement. The important lessons we can learn from these cases are that we need to watch wind speed and wind direction for all herbicide applications, and that volatility of products remains a potential concern for herbicides moving from the desired target field. Unfortunately, these can be expensive lessons to learn if fault is determined in cases where injured nursery crops can be valued over $20,000 per acre.

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Air Temps and Herbicide Efficacy

Authors: Bill Johnson and Joe Ikley

We've received several calls this year about reduced herbicide efficacy, specifically with glyphosate and glyphosate mixtures when sprayed either during cool temperatures or just after a cold spell. This is not a new phenomena, but been accentuated this spring by the fact we had an extended cold spell through the middle and latter part of the spring when we are normally doing burn down treatments for our no till and cover crop acres. This year in particular, we had several growers experience challenges with glyphosate activity when tank mixed with atrazine or an atrazine premix. Fortunately, we had similar treatments one of cover crop trials that we are conducting at a couple of locations and were able to capture some good images and weather information around those treatments. The purpose of this article is to share our data and experiences with this situation in 2018.

We are conducting cover crop experiments at three different Purdue Agricultural Centers this year. One of the trial objectives is to look at the influence of termination timing on herbicide efficacy, weed suppression, and crop yields. Our cereal rye experiment provided a good data set to look at the influence of air temperatures on glyphosate and glyphosate plus atrazine activity. In table 1, we are showing the data for two of our sites, Throckmorton Purdue Agricultural Center (TPAC) near Lafayette Indiana and the Southeast Purdue Agricultural Center (SEPAC) near Butlerville, Indiana. In table 1 we can see the daytime high and low temperatures for the two days prior to spraying, spray day, and the next two days after that. At TPAC, you can see that the two days before spraying we had daytime air temps that got up in the 50s and 60s, But night time air temps that got as low as 29° on the day of spraying. The next two days after the spray treatment was made, our nighttime air temps got down as low as 29°. If we look at the SEPAC information you can see that the two days before spraying, and the day of spraying nighttime air temps or down in the 30s and low 40s. The day after spraying we had a nighttime low of 42.

In figure 1 you can see images from the two research sites. At both sites you can see that Roundup alone is providing more control then Roundup plus Acuron at two weeks after treatment. The common thread with these results is the influence of cool nighttime temperatures on herbicide activity. For many years we focused our attention mostly on daytime air temperatures and its influence on herbicide activity. In our data set, daytime are temps are mostly in the 50's and above. However, over the last 8 to 10 years we have become more educated on the influence of nighttime air temps on herbicide activity. The moral of the story is that daytime air temperatures may seem ideal for herbicide activity, but night time air temperatures can cause plants to slow their growth rates or shut down. We know that if plants aren't actively growing, herbicide efficacy is reduced for translocated herbicides. Our general rule of thumb is that we want daytime air temperatures in the 50s and 60s and nighttime temperatures in the 40s or higher to assure plants are actively growing to maximize the effectiveness of postemergence translocated herbicides.

Table 1. Low and high air temperatures (°F) for two days before termination application to two days after application.

	TPAC Low	TPAC High	SEPAC Low	SEPAC High
2 Days Before Application	50	60	41	55
1 Day Before Application	39	50	30	59
Day Of Application	29	65	33	71
1 Day After Application	29	65	42	80
2 Days After Application	35	54	59	82

Figure 1. Picture of Roundup alone compared to Roundup + Acuron two weeks after herbicide application to terminate cereal rye.

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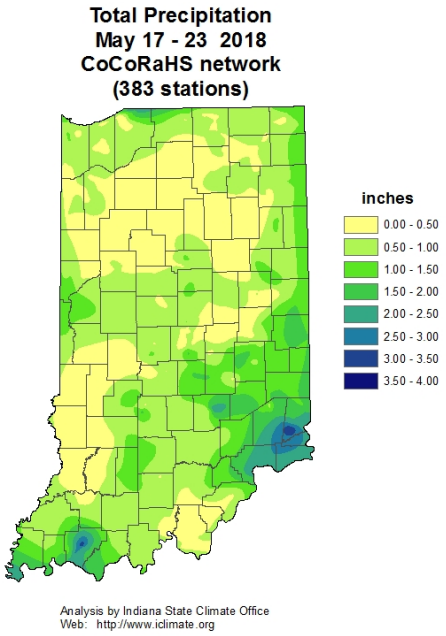
Total Precipitation May 17-23, 2018



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Average Temperature Departure from Mean May 15-21, 2018