PURDUE UNIVERSITY | Extension - Entomology

Pest&Crop newsletter

Issue: 2022.26
September 16, 2022

Purdue Cooperative Extension Service and USDA-NIFA Extension IPM Grant
This work is supported in part by Extension Implementation Grant 2017-70006-27140/ IND011460G4-1013877 from the USDA National Institute of Food and Agriculture.

In This Issue

Fall Applied Herbicides and Winter Weed Control

(Marcelo Zimmer) & *(Bill Johnson)*

With harvest season right around the corner, now is the time to start making plans for the control of winter annual weeds, including marestail. When harvest and post-harvest conditions allow, fall is the best time to control many of these weeds. This is because the weeds are a lot smaller in the fall, and our fall weather tends to be consistently warmer and drier than our variable cool and wet springs. With fall-applied herbicide season upon us, we wanted to provide a few application tips to those who are planning on making fall herbicide applications:

1. Scout fields and determine whether you need an application. Not all fields need an application; however, if you pull back the crop residue after harvest, especially in corn fields, you are likely to find infestations of winter annual weeds. Scouting fields should begin soon after a field is harvested, with special attention paid to fields with heavy infestations of marestail this year.
2. One of our biggest weed problems across Indiana every year is marestail control in soybeans, and 2022 has been no different. Many growers struggle to control marestail in their spring burndown programs in April and May, especially in fields infested with fall-emerged marestail. Marestail size greatly reduces the effectiveness of synthetic auxin herbicides such as 2,4-D and dicamba. Fall-emerged marestail plants may be over a foot tall by the time weather conditions allow for spring herbicide applications (Figure 1). This highlights the importance of using a fall-applied herbicide program to control marestail and other winter annual weeds. We also have known cases of glyphosate and ALS-resistant marestail in most counties in Indiana and we have noticed a substantial number of fields with marestail in them late this summer that either were not controlled by postemergence herbicides or emerged after postemergence herbicides were applied. It would be wise to treat fields with marestail with a combination of dicamba and 2,4-D as part of the fall herbicide program. Fields that are harvested early would benefit from the addition of 4 to 6 ounces of metribuzin to provide residual control of marestail this fall until the ground freezes. This residual will not last into the spring but will help with late-fall emerging plants. Fields harvested in late October or November may not need metribuzin unless it stays warm late into the fall.
3. The best time to apply herbicides in the fall is on days when the morning low is above freezing. The best foliar herbicide activity will occur when you have a few days of warm daytime air temperatures (50’s or higher) and applications are made in the middle of this period. If fall-applied herbicides are needed, one should not leave the sprayer in the shed if daytime temperatures do not get into the 50’s. Just remember that the speed of foliar activity of systemic herbicides like glyphosate and 2,4-D is less in cool conditions. In these conditions, it would be advisable to use residual products tank-mixed with the foliar products to provide residual activity for periods when weather conditions might allow additional weed emergence.
4. There are pockets across the state that also deal with heavy infestations of dandelions every year (Figure 2). Dandelions are controlled much more effectively with fall applied programs than with spring-applied herbicides. Dandelions can be controlled with fall applications of 2,4-D or a glyphosate product. Use a minimum of 1 qt/A of 4 lb/gallon 2,4-D products and 1 qt/A (0.75lb ae/A) of a glyphosate product. Once we have had a couple of hard frosts, the dandelions may be a litter tougher to control, so don’t rely on reduced rates.
5. In fields with heavy corn residue, increase spray volume or decrease speed to increase carrier volume. Many weeds will be shielded by residue, so spray coverage can be compromised. In addition, the use of residual products in these situations will increase the consistency of winter weed control because these products can be washed off of the corn residue with precipitation and into the soil where they can be effective.

A fall emerging marestail plant that reached 1feet in height by May 13, 2015. Herbicide applications would have marginal results at best on this size of marestail plant.

Figure 2. Flowering dandelions in no-till corn stubble.

Learning to Identify Plants is a Worthy Skill

(Keith Johnson)

Plants are around us no matter where you live. I am challenged with plant identification as an agriculturalist and enjoy learning to identify plants that are not in production agriculture, too.

A week ago, I was with an Extension Educator and a producer to confirm weeds of concern in a pasture; we then were able to discuss best control options. An email request, including pictures, from a hay producer was shared this week with me. Undesired plants of yellow foxtail, barnyardgrass, and crabgrass were noted and one photo had horsenettle in it, a spreading broadleaf plant that has toxic properties.

Too many of us learned how to identify poison ivy from the unfortunate contact we had with it on a hike or learned how to identify it from someone else that felt itchy discomfort. Some individuals have taken an interest in foraging out food resources in the great outdoors. They took time to learn what was edible, would cause a stomach ache, or even death if a plant or parts of a plant made it to their mouths and swallowed. One cannot be most effective in controlling a pesky plant in a field where there are desirable plants without identifying the pesky plant. Can the problematic plant be controlled with cultivation, or crowded out with proper fertilization and reduced grazing pressure? What herbicides will best control the weed without doing harm to the desired plants?

Early in my career, I would identify plants with library-type books, field guides and plant identification keys. I have great respect for individuals that develop identification keys as they are extremely detailed about shape and size of plant parts and have a hierarchical format. When using a key, it is imperative that you learn plant morphology terms first or the key will have no value. Decades later, I still find these resource materials useful but there are abundant online resources and a few great apps that can help narrow down what the plant in question may be.

At the Purdue University Crop Diagnostic Training and Research Center there are over 40 large tile rings planted singly to common Midwest USA forages. Most impressive are the over 300 tile rings (by my guesstimate) that have a weedy-type plant in each ring. The hours of time taken by Diagnostic Training Center staff to manage the plants in the rings in a year are many; the value the rings give helping educate agriculturalists, novices or long time, about plant identification and management is immense. A toxic plant identification area is in the planning phase and will be placed near the Animal Disease Diagnostic Laboratory at the Southern Indiana Purdue Agricultural Center. Identification of a plant in that upcoming resource just might save livestock for individuals that take time to learn what the plants are and follow through with control measures.

Many forage species at the Purdue University Crop Diagnostic Training and Research Center are used for identification education.

Dr. Ron Lemenager discusses with many of his Purdue University beef management class how to identify tall fescue and the attributes it has as a forage for beef cattle at the Purdue University Crop and Plant Diagnostic Training Center.

A team from Nebraska participating in the Regional High School Crop Scouting Competition takes on the challenge of identifying forages at the Purdue University Crop Diagnostic Training and Research Center.

Warm, dry conditions ahead

(Beth Hall)

After another wet weekend and cooler temperatures to start this week, it may be surprising to hear that conditions will be changing back to warm and dry for the next several weeks. Climate models are strongly favoring above-normal temperature throughout the rest of September with a slight favoring of below-normal precipitation. Abnormally dry conditions continue to persist in counties across northern Indiana, but the spatial extent is gradually shrinking (Figure 1). It is too soon to tell if the upcoming warm and dry outlooks will be strong enough to expand and intensify those drier areas or if a few periodic rain events will be enough to keep conditions relatively stable. Monthly (October) and seasonal (September-October-November) outlooks were released on 15 September 2022. For both of these time frames, the outlooks are favoring above-normal temperatures to continue with below-normal precipitation across Indiana (Figure 2).

With each day that passes, we get closer to the first fall freeze event – whether that is defined at 32°F, 28°F, or some other temperature threshold. Over the past several decades, with increasing temperatures, the story has been an expanding growing season defined as the consecutive number of days between the last spring freeze and first fall freeze. Is this expanded season highly variable from year to year or relatively stable? If the growing season, on average, is expanding, is it due more to earlier last spring freeze dates or later first fall freeze dates? The Midwestern Regional Climate Center (mrcc.purdue.edu) has developed a new tool that allows users to peruse the historical data and find answers to these questions and more. This tool will be formally launched later this fall, but a webinar is being offered this next Wednesday, September 21, 2022 at 11am EDT (https://www.zoomgov.com/j/1605071265) for anyone wanting sneak peek and learn more about what the findings say. This is a project that was supported by the USDA Midwest Climate Hub with a focus on agricultural impacts and awareness regarding climate trends and extremes.

Finally, as temperatures gradually cool, the accumulation rate of modified growing degree days (MGDD) slows down. Figures 3 and 4 show the latest accumulation totals and departure from climatological average, respectively. MGDDs now range from slightly over 3400 units in southern Indiana to around 2000 units in the northern counties. These accumulations are around 150-200 units above normal across central and southern parts of the state and near normal in the northern third counties.

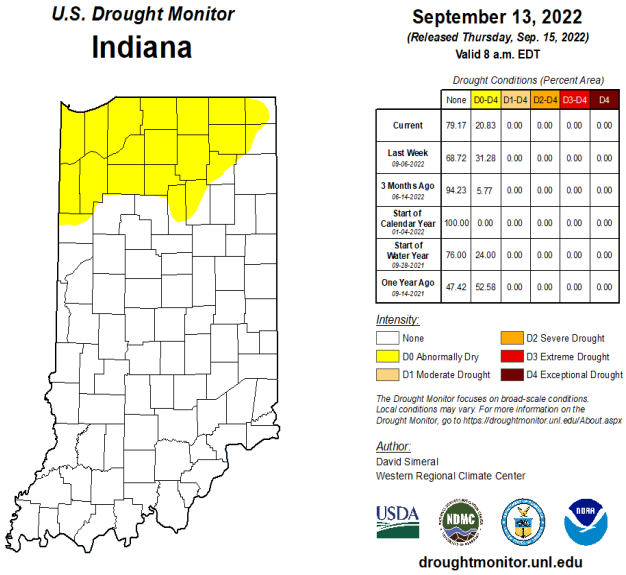

Figure 1. U.S. Drought Monitor for data through August 30, 2022.

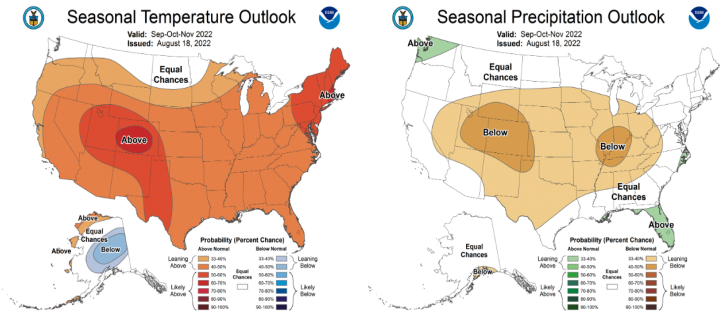

Figure 2. Climate outlook for the 3-month period of September-October-November from the national Climate Prediction Center. Levels of shading indicate levels of confidence for above- or below-normal conditions to occur. Temperature outlook is on the left; Precipitation outlook is on the right.

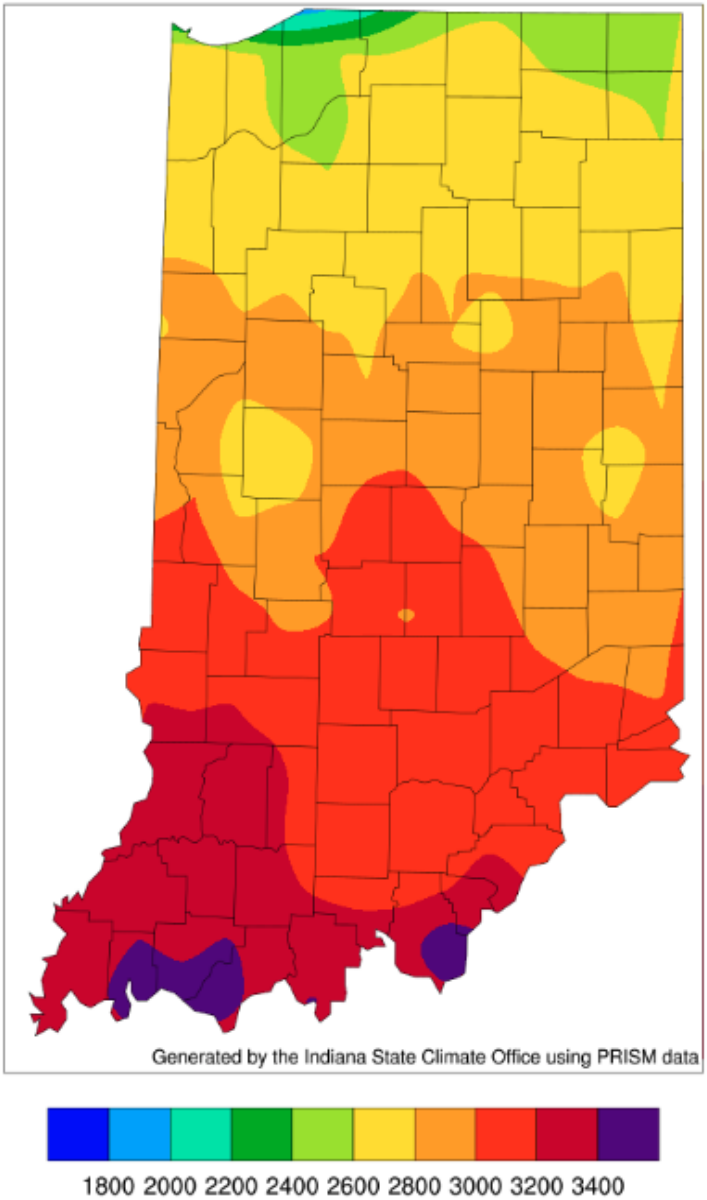

Figure 3. Modified growing degree day (50°F / 86°F) accumulation from April 15-September 13, 2022.

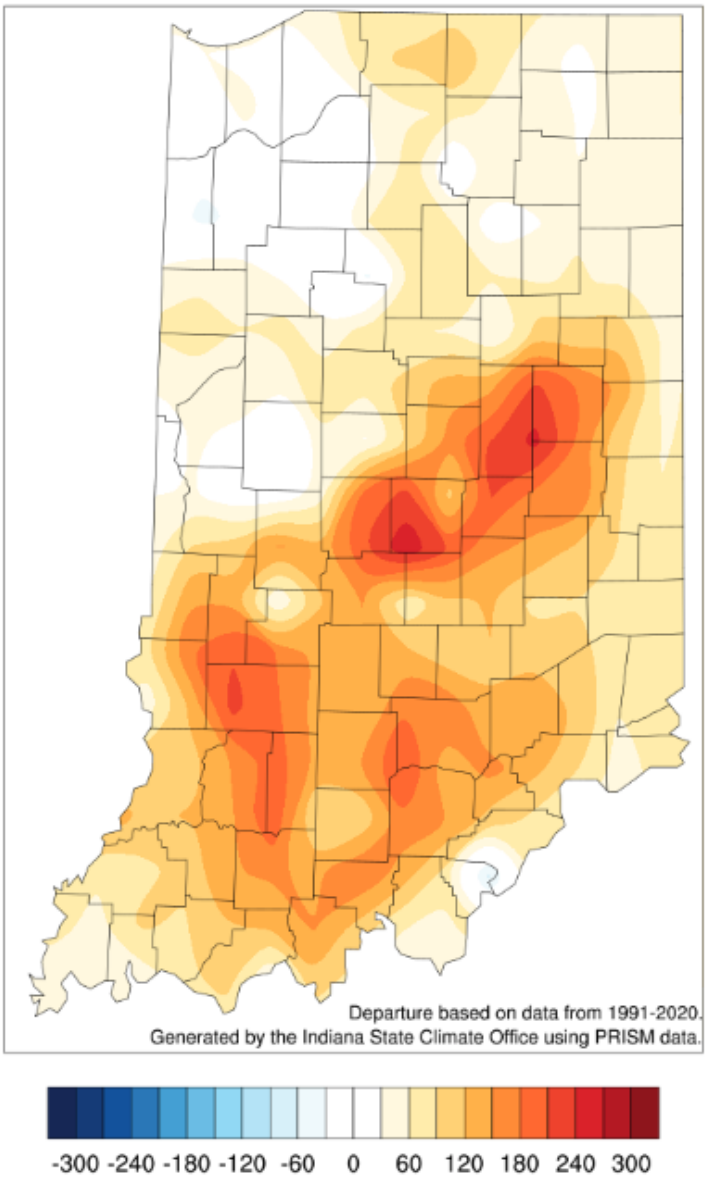

Figure 4. Modified growing degree day (50°F / 86°F) accumulation from April 15-September 13, 2022, represented as the departure from the 1991-2020 climatological average.

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