



Purdue Cooperative Extension Service

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Please take our *Pest&Crop* on-line survey for 2012. It only takes a few minutes. We value your opinion! Click here for the link:

<http://survey.entm.purdue.edu/phpESP/public/survey.php?name=2012pestcrop>

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Bits & Pieces

2013 Crop Management Workshops... Mark Your Calendar – (John Obermeyer) – (John Obermeyer)

The Purdue Pest Management Program is offering a series of Crop Management Workshops (CMWs) to be held at five locations through Indiana. Here is the locations and dates:

Monday – January 28, 2013 – Grace College, Rodeheaver Auditorium, Winona Lake, IN
 Tuesday – January 29, 2013 – Madison Co. 4-H Fairgrounds, Alexandria, IN
 Wednesday, January 30, 2013 – Pines, Evergreen Room, Seymour, IN
 Thursday, January 31, 2013 - Robert E. Green Activities Center, Vincennes, IN
 Friday, February 1, 2013 – Beck Agricultural Center, West Lafayette, IN

Schedule: (Times are Eastern Time)

8:30 AM – 9 AM	Registration
9 AM – 12 PM	Morning Presentations
12 PM – 12:45 PM	Lunch Provided
12:45 PM – 4:30 PM	Afternoon Presentations

The topics of these meetings are adapted from the previous cropping year, new technologies, questions asked by agribusiness personnel, and suggestions from past CMWs. Certification credits for Indiana's commercial (CCH) and Private (PARP) Pesticide Applicators and Certified Crop

Advisors (CEU) will be awarded to attendees. Credits for Ohio applicators have been requested.

Brochures will soon be mailed to all Indiana Commercial Pesticide Applicators and Certified Crop Advisors. On-line registration is available at <<http://www.conf.purdue.edu/crop>>. Click on the Crop Management Workshop you want to attend. Looking forward to seeing you there!



<http://extension.entm.purdue.edu/pestcrop/index.html>

Weeds

Palmer Amaranth Populations Confirmed in Indiana

- (Travis Legleiter and Bill Johnson) -

Purdue weed scientist's with the assistance of Purdue extension educators and various agricultural industry reps have identified corn and soybean fields in north western Indiana that have Palmer amaranth infestations. At least 40 fields across four counties have been confirmed to have Palmer amaranth, with several fields having overwhelming infestations (Map 1). Palmer amaranth plants were also found along roadsides and in drainage ditches throughout the area of infested fields. This is not the first discovery of palmer amaranth in Indiana, but is the most significant as previous populations appeared to be confined to select river bottoms in southwestern Indiana. The large number of infested acres and dense infestations in multiple fields across

at least four counties indicates that these populations have been present for at least a couple of years. The majority of fields observed with palmer amaranth infestations have survived multiple applications of glyphosate and PPO inhibiting herbicides.

The Impact of Palmer Amaranth

The spreading of manure from beef and/or dairy operations with feed rations that contained cotton seed/cotton seed hulls from the southern US that was infested with palmer seed is suspected to be the source of the populations found in northern Indiana. The overwhelming majority of palmer amaranth populations in the south are glyphosate resistant and it is assumed that this why multiple applications of glyphosate have failed to control the transplanted populations in northwest Indiana.



Map 1. Indiana map of counties with confirmed Palmer amaranth populations. Counties in red represent most recently confirmed populations with the numeral representing the number of known locations per county. Yellow counties represent previously confirmed populations.

Palmer amaranth is by far the most competitive of the amaranth species and has had significant economical impact in the southern United States. Entire cotton fields have been abandoned solely due to the lack of control of glyphosate resistant Palmer amaranth. Southern producers have also reverted back to using hand rouging crews to combat competition from palmer amaranth. Palmer amaranth plants grow rapidly in the summer heat, upwards of 2 inches/day, and can reach heights greater than seven feet. The seed production capabilities of palmer amaranth are equally impressive with individual female plants capable of producing over 500,000 seeds.

Palmer Amaranth Identification

The identification of palmer amaranth is critical to keeping track of where this weed has established itself in Indiana. Unfortunately, it is suspected that the recently identified populations have been misidentified over the last couple of years allowing it to spread without proper control. Without close inspection Palmer amaranth can be confused with other more commonly known amaranth species such as: Redroot or smooth pigweed and waterhemp. The following publications will assist you in correctly identifying amaranth species:

It's a pigweed, right? <<http://www.ppd.l.purdue.edu/PPDL/weeklypics/4-30-12.html>>

Pigweed Identification - A pictorial Guide to the Common Pigweeds of the Great Plains <<http://www.ksre.ksu.edu/library/crps12/s80.pdf>>

Identifying the Enemy <<http://bulletin.ipm.illinois.edu/pastpest/articles/200122g.html>>

Simplified steps that Purdue weed scientist's recommend to identifying pigweeds is to:

1. Look for hairs on the stem to differentiate Redroot/Smooth pigweed from waterhemp and palmer amaranth
2. Observe the petiole lengths. The petiole is the structure that attaches the leaf blade to the stem of the plant. Palmer amaranth will have a petiole that is as long or longer than the leaf blade itself (Pic 1 and 2). Common waterhemp will have petioles that are shorter than the leaf blade.

Some other characteristics that will help differentiate Palmer and waterhemp is the growth pattern and female seed head structures. If you look at the main growing point from above the plant Palmer amaranth, it will appear to have a rosette shape with ovate leaves and long petioles, similar to a poinsettia (Pic 3). Palmer amaranth will have multiple seed heads, but will be distinguished with one main seed head that can reach 2 to 4 feet in length. The seed heads of female palmer amaranth plants will also be spiny, you will know when you grab one.



Pic 1. Palmer amaranth leaf with long petiole that is a key identifier of Palmer amaranth plants.



Pic 2. Palmer amaranth leaf with petiole bend back over the blade to demonstrate the length of the petiole being longer than the blade itself.



Pic 3. Palmer amaranth plant from above, notice the rosette leaf pattern that is similar to a poinsettia plant.

The presence of spines (hardened seed bracts) in female palmer amaranth seed heads can incline people to call it spiny amaranth. Spiny amaranth is predominantly a weed of pastures and livestock holding lots and has bushy growth habit. Spiny amaranth also has spines throughout its life-cycle especially at all node axil's. Spiny amaranth is also a monoecious plant (male and female flowers on one plant), where as Palmer amaranth is dioecious (separate male and female plants) with only females having spiny flowering structures.

Palmer Amaranth Control and Management

The management and control of Palmer amaranth must be aggressively proactive. Producers should also treat all Palmer amaranth with equal vigilance regardless of glyphosate sensitivity. The key to management of Palmer amaranth is to control it at its most vulnerable stage, germination. The use of preemerge residual herbicides is critical in both corn and soybean.

There are a large number of corn preemerge herbicides that include atrazine premixes that will substantially reduce the amount of plants that emerge and require postemerge applications. There are also a large number of postemerge corn herbicides that will control palmer amaranth including HPPD inhibitors and growth regulators. In fields heavily infested with palmer amaranth, it is recommended to grow

corn for multiple years as the number of effective herbicides and MOA rotation is far greater than that of soybeans.

Soybean fields with Palmer amaranth must start clean with tillage or an effective burndown and receive a preemerge residual herbicide. This is the most critical part of a palmer amaranth soybean control program as postemerge options are limited and variable. There are a large number of preemerge soybean herbicides available for palmer amaranth control, although flumioxazin and sulfentrazone containing products will provide the most residual activity. Chloroacetamide herbicides, dinitroanilines, and higher rates of Sharpen-based herbicides can help as well. Postemerge products are limited to the PPO inhibitors and Liberty (Liberty Link beans only) and the effectiveness of these products can be variable. PPO inhibiting herbicides often referred to as burners and blazers, include Cobra, Reflex, Flexstar, and Ultra Blazer and must be applied to small plants to achieve full control. Liberty in Liberty Link beans can be an effective management technique if one doesn't want to grow continuous corn. However, you should also use residual herbicides and remember that Liberty is effective on small (2-3") plants; the efficacy of Liberty on large plants and heavy infestations will be variable. In heavy infestations producers should overlap residuals by also applying a residual herbicide at the postemerge application. The fomesafen products (Reflex and Flexstar), have residual properties as well as postemerge efficacy. Other postemerge residuals include Dual II Magnum, Outlook, and Warrant. These products will not control emerge weeds and thus should be tank mixed with a postemerge herbicide.

Specific herbicide programs and rates will vary between soil types and production practices. Purdue Weed Science will be working to produce an in-depth Palmer amaranth identification, control and management publication in the next couple of months.

Document Descriptor

Palmer amaranth populations have been confirmed in five counties in northwest Indiana. Plants have survived multiple herbicide applications and are suspected to have been brought into the region through cotton seed used in feed rations and spread onto fields through manure. Further identification and management strategies will be warranted to contain this aggressive weed.

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Happy Holidays from all of us with the Pest&Crop Newsletter!