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Scout And Identify Pigweed Species Now

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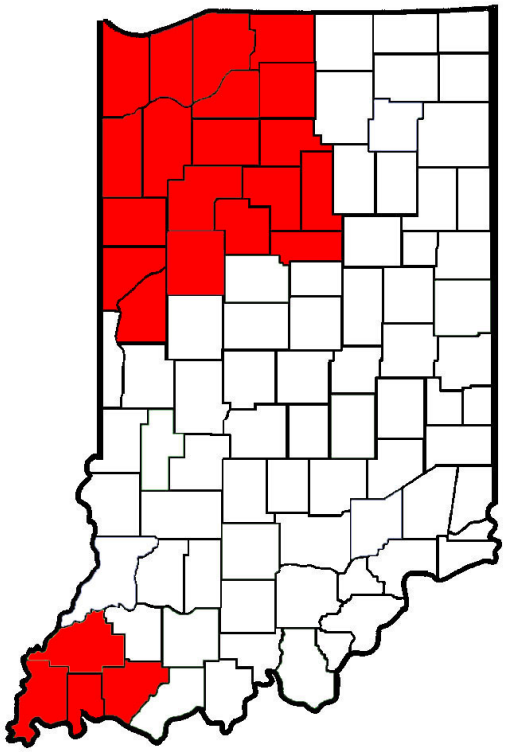
The majority of corn and soybean acres in the state of Indiana have been planted and are quickly advancing through their growth stages. The time to start scouting fields and identifying weeds for post-emergence herbicide applications is quickly approaching, if not already here for many producers.

At our Palmer amaranth research plots located in Cass County we have already Palmer amaranth plants that have emerged and have quickly reached 2-3 true leaves. For those producers living in the Northwestern quadrant of the state, you need to be on high alert for the presence of this weed in your fields. Even if it was not present in your fields last year, you need to be aware of this weed and able to distinguish it from the other pigweed species. Palmer amaranth is potentially the most aggressive agronomic weed Indiana producers have ever dealt with, and must be managed with an aggressive control program. Seed bank populations will increase quickly in fields where Palmer amaranth is not correctly identified or managed leading to several years of expensive control programs to manage this aggressive weed.

The first key, as eluded to earlier, is the correct identification of palmer amaranth and it's very close amaranth relatives: common waterhemp, redroot pigweed, and smooth pigweed. A large majority of the populations discovered last fall had been misidentified as waterhemp for a number of years, which allowed the populations to spread quickly to unmanageable levels.

Photos of Palmer amaranth seedlings taken in Cass County Indiana on May 20, 2013 (Top) and May 29, 2013 (Bottom).



Producers in the highlighted counties should be on high alert for the presence of Palmer amaranth in their corn and soybean fields. The highlighted counties have either had Palmer amaranth reported within that county or a neighboring county.

Amaranth ID

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Differentiating a redroot or smooth pigweed from Palmer amaranth is as simple as looking for fine hairs on the stems and leaves. Redroot and smooth pigweed will have obvious fine hairs on the stems and leaf surfaces, whereas Palmer amaranth will be hairless.

Identifying the differences between Palmer amaranth and common waterhemp (both species are hairless) is much more difficult, especially at a young age. At the cotyledon and first true leaf stage it is even difficult for trained weed scientist to differentiate Palmer amaranth from common waterhemp. A few differences that you can note as these plants begin to put on the second and third true leaves are as follows. We have also included a few images for your reference.

-Singular hair in the leaf tip notch: a characteristic of all pigweed (amaranth) species is a notch in the leaf tip. In the plants we have examined from around the state of Indiana it has been consistent that the first, second, and/or third true leaf of Palmer amaranth can have a small singular hair that protrudes from the leaf tip notch. This singular hair often does not occur on all leaves, but is likely to occur on at least one leaf in the early growth stages. We have not observed this singular hair in the leaf tip notches of common waterhemp seedling from the state of Indiana.

-Petiole length of the first true leaves: As noted in our Palmer amaranth biology, identification and management publication (WS-51), one of the main characteristic differences in waterhemp and Palmer amaranth is the length of the petioles. In Palmer amaranth plants the petioles can be as long or longer that the leaf blade itself. In the Palmer publication we included pictures of mature plants, but this characteristic can be observed in two to four true leaf plants as well. As Palmer plants begin to add the second and third nodes the first true leaf will begin to rapidly elongate its petiole to capture sunlight outside of the shadow of the newly emerging leaves above it. The petioles of common waterhemp will consistently stay short, and the leaf blades themselves will be elongated to capture more sunlight. The elongating petioles of Palmer amaranth seedlings will also begin give the seedling the characteristic rosette pattern as you look down at the growing point.

These two characteristics are the most evident differences between Palmer amaranth and common waterhemp at the seedling growth stages. As the plants become larger, all of the characteristics noted in our Palmer amaranth publication (WS-51) will become more noticeable and evident. Although proper identification of seedling plants is necessary in order to make herbicide applications at the 3-6" weed heights that has are recommended for post emergence Palmer amaranth control.

Redroot and/or smooth pigweed seedlings with fine hairs present on the stem and leaf surfaces.

A common waterhemp seedling lacking the singular hair in the leaf tip notches. Also note the long linear leaf blades attached to short petioles, especially the first true leaves.

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Palmer amaranth seedlings with the singular hair in the leaf tip notch of the second true leaf.

Palmer amaranth seedlings with the elongated petioles of the first true leaves.

Information listed here is based on research and outreach extension programming at Purdue University and elsewhere.

The use of trade names is for clarity and does not imply endorsement of a particular product, nor does exclusion imply non-approval. Always consult the herbicide label for the most current and update precautions and restrictions. Copies, reproductions, or transcriptions of this document or its information must bear the statement:

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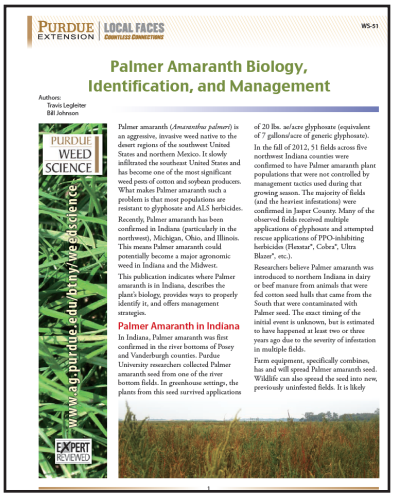

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WS-51

Palmer Amaranth Biology, Identification, and Management

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Palmer amaranth (*Amaranthus palmeri*) is an aggressive, invasive weed native to the desert regions of the southwest United States and northern Mexico. It slowly infiltrated the southeast United States and has become one of the most significant weed pests of cotton and soybean producers. What makes Palmer amaranth such a problem is that most populations are resistant to glyphosate and ALS herbicides.

Recently, Palmer amaranth has been confirmed in Indiana (particularly in the northwest), Michigan, Ohio, and Illinois. This means Palmer amaranth could potentially become a major agronomic weed in Indiana and the Midwest.

This publication indicates where Palmer amaranth is in Indiana, describes the plant's biology, provides ways to properly identify it, and offers management strategies.

Palmer Amaranth in Indiana

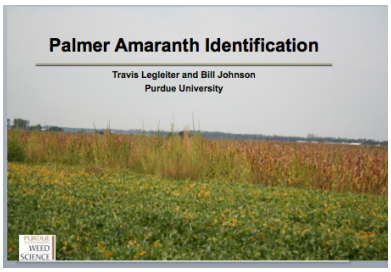
In Indiana, Palmer amaranth was first confirmed in the river bottoms of Posey and Vanderburgh counties. Purdue University researchers collected Palmer amaranth seed from one of the river bottom fields. In greenhouse settings, the plants from this seed survived applications of 20 lbs. ae/acre glyphosate (equivalent of 7 gallons/acre of generic glyphosate).

In the fall of 2012, 51 fields across five northwest Indiana counties were confirmed to have Palmer amaranth plant populations that were not controlled by management tactics used during that growing season. The majority of fields (and the heaviest infestations) were confirmed in Jasper County. Many of the observed fields received multiple applications of glyphosate and attempted rescue applications of PPO-inhibiting herbicides (Flexstar®, Cobra®, Ultra Blazer®, etc.).

Researchers believe Palmer amaranth was introduced to northern Indiana in dairy or beef manure from animals that were fed cotton seed hulls that came from the South that were contaminated with Palmer seed. The exact timing of the initial event is unknown, but is estimated to have happened at least two or three years ago due to the severity of infestation in multiple fields.

Farm equipment, specifically combines, has and will spread Palmer amaranth seed. Wildlife can also spread the seed into new, previously uninfested fields. It is likely

More in-depth identification and management information is contained in our Palmer amaranth publication (WS-51) that is available from the Purdue Education Store (https://mdc.itap.purdue.edu/item.asp?itemID=21061#.UaiaX-ujTq0).



Watch our YouTube slide video on Palmer amaranth seedling ID. Click on the button above or go to: http://www.youtube.com/watch?v=wNgRvvnPQJ8

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