Palmer amaranth in Michigan

Keys to Identification

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This past season a grower in southwest Michigan reported that he was not able to control **"pigweed"** in his soybean field with glyphosate (Roundup). The pigweed was later identified as Palmer amaranth (*Amaranthus palmeri*). Palmer amaranth is not native to Michigan or to other states in the northern U.S. In fact, there are no reports of Palmer amaranth ever being found in Michigan according to Michigan State University's and other universities' herbarium records. Palmer amaranth is a pigweed that is native to the desert Southwest and is one of 10 common pigweeds in the Great Plains and the Southeast U.S.

Palmer amaranth in Michigan soybean field

Characteristics:

Palmer amaranth or "Palmer pigweed" as it is referred to in the South, is the most competitive and aggressive of the different pigweed species. The characteristics that make growers fearful of this weed include:

- Extended emergence patterns (May to mid-July in the Southern U.S.)
- Rapid growth rate (up to 2½ inches per day)
- High water use efficiency "drought tolerance"
- High seed production (avg. 40,000 seeds per plant)
- Dioecious (separate male and female plants) – leads to high degree of genetic diversity
- Potential hybridization with other pigweeds
- Rapid development of herbicide resistance

Palmer amaranth can exceed 8 feet tall

Identification:

Palmer amaranth is difficult to distinguish from Michigan's common pigweeds (redroot pigweed, smooth pigweed, and Powell amaranth). However, there are some distinguishing characteristics that will help in identifying Palmer amaranth.

Seedling Palmer amaranth:

- Leaves egg-shaped, hairless
- A small point or "spike" may be present on the leaf tip

Seedling Palmer amaranth

Photo credits:
Dan Rajzer, MSU Extension
Christy Sprague, MSU Weed Science

Palmer amaranth in Michigan

Palmer amaranth stem is smooth

Powell amaranth, redroot pigweed, and smooth pigweed stems are hairy

Long petiole of Palmer amaranth (top), Powell amaranth leaf (bottom)

Symmetrical arrangement of leaves

"PALMER AMARANTH IS THE MOST COMPETITIVE AND AGGRESSIVE OF THE PIGWEED SPECIES"

Female Palmer amaranth inflorescence

Leaf axil flowers, prickly to touch

Identification (continued):

Immature Palmer amaranth:

- The stem and leaf surfaces of Palmer amaranth are smooth (few to no hairs), distinguishing it from redroot pigweed, smooth pigweed, and Powell amaranth
- Petioles are often as long or longer than the leaf blades
- Leaves are in a symmetrical arrangement, similar to a poinsettia (can have v-shaped watermark on each leaf)

Mature Palmer amaranth:

- Male and female flowering structures are on separate plants
- Flowering structures (inflorescence) are thick, non-branched, and 1 to 2 feet long
- Male flowering structures feel soft and shed pollen; female flowering structures have pointed bracts and are sharp or prickly to the touch and contain seed
- Flowers can also be found in the leaf axils

Documenting the spread of Palmer amaranth:

Palmer amaranth has only been identified in a small geographic area in St. Joseph County. This population has been confirmed **resistant to glyphosate.** See the fact sheet "Glyphosate-resistant Palmer amaranth in Southwest Michigan: Confirmation and options for management". It is important to keep Palmer amaranth from spreading to surrounding areas.

If you suspect that you have glyphosate-resistant Palmer amaranth, please contact Dan Rajzer, Michigan State University Extension Educator, Cass County Office, rajzer@anr.msu.edu, 269-445-4438 or Christy Sprague, Michigan State University Weed Extension Specialist, sprague1@msu.edu, 517-355-0271 x. 1224.

Location of Palmer amaranth in Michigan