

Palmer amaranth - what it is and what to do now

What is Palmer amaranth and where is it coming from?

- Palmer amaranth is an *Amaranthus* (pigweed) species that has become a devastating glyphosate-resistant weed problem in the South and parts of the Midwest over the past decade. It has caused substantial losses in crop yield and farm income, and a permanent increase in the cost of herbicide programs.
- There are several mechanisms for the movement of Palmer amaranth into Ohio:
 - movement of equipment from Palmer-infested areas into Ohio;
 - the presence of palmer seed in cotton-derived feed products that are transported directly from the south into Ohio;
 - and the presence of Palmer seed in cover crop and wildlife seed that originates in areas infested with Palmer amaranth, such as Kansas and Texas.
- Preventing additional Palmer infestations in Ohio is a primary goal of the OSU weed science program, and will require efforts from the entire Ohio agricultural community.



Why makes Palmer amaranth such a problem?

- Prolific seed production. Female Palmer plants produce 100,000 to 500,000 seeds.
- Broad period of emergence - April to August.
- Small seed that is well adapted to minimum and no-tillage.
- Rapid growth - up to 3 inches per day.
- Most populations are resistant to glyphosate and ALS inhibitors (site 2).
- Timing of herbicide application is critical. Postemergence herbicides must be applied when Palmer plants are less than 3 inches tall.
- Dioecious reproductive system (male and female plants). Obligate outcrossing results in rapid spread of herbicide resistance.



Palmer amaranth distribution in Ohio (late 2016)

- Most counties shown on the map as “infested” (red square) have only a few populations of Palmer amaranth. In some cases only a few plants were found and the “infestation” has been completely remediated.
- Palmer is more widespread in several areas:
 - an area near two dairies along the Madison-Fayette county line north of Jeffersonville
 - Wayne County east of Orrville
 - Mahoning and Columbiana Counties

Herbicide resistance in Palmer amaranth

- Most populations of Palmer amaranth in Ohio are resistant to glyphosate (group 9) and ALS inhibitors (group 2). Palmer amaranth will not be controlled by burndown or postemergence applications of glyphosate alone. The addition of ALS inhibitors such as Classic and Pursuit will not improve control.
- Populations in the South have developed resistance to site 14 herbicides (fomesafen, Cobra, etc), and appear to be developing resistance to glufosinate (Liberty, Cheetah, Interline).



Palmer amaranth population surviving treatment with glyphosate:

- far left - untreated plant;
- middle - 20 lbs ae/A;
- right - 10 lbs ae/A

Bottom line - steps to take for prevention

- Know what Palmer amaranth looks like and if there is any in the neighborhood.
- When purchasing used equipment, know where it has been previously. Avoid purchase of combines that come from Palmer-infested areas.
- Scout recently seeded CREP, wildlife, and similar areas for the presence of Palmer. For any intended seedings of this type, ODA will test seed lots for the presence of Palmer seed at no charge. They must pick it up from your operation (do not mail or drop off). Contact ODA for more information - 614-728-6410.
- Avoid use of cotton feed products that might contain Palmer amaranth seed - check with feed supplier for more information. When using manure from another animal operation, know whether they are using cotton feed products.
- Include residual herbicides in corn and soybean programs to control the early-emerging Palmer amaranth plants.
- If Palmer plants are evident at the time of postemergence treatment, modify the herbicide program appropriately.
- Scout fields starting in mid July for the presence of Palmer that escaped herbicide programs. Get help with identification if in doubt.
- Plants without mature seed (black) should be pulled out (uprooted) or cut off just below soil and removed from field, and then burned or buried at least a foot deep or composted. Plants with mature seed should be bagged and removed from field.
- Do not run the combine through Palmer patches that are discovered during harvesting.
- Consult OSU and USB Take Action resources for additional information on management of established populations.
- <http://u.osu.edu/osuweeds/>; <http://takeactiononweeds.com>



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