

Palmer Amaranth and Waterhemp



Palmer amaranth plants in soybean field
Photo: T. Libhart, PA Department of Agriculture

FOR INFORMATION
Contact State Botanist
Trilby Libhart
Email- tlibhart@pa.gov
Or your local Penn State Extension
Office

TO REPORT POSSIBLE
POPULATIONS OF PALMER
AMARANTH OR WATERHEMP
Contact the
PA Invasive Species Reporting
Line-1.877.464.9333 or online at

To Report Palmer Amaranth or
Waterhemp sighting online [Click
Here >>](#)

DESCRIPTION

Palmer amaranth (*Amaranthus palmerii*), is an annual agricultural weed that was introduced into Pennsylvania in 2013. It is a member of the pigweed family and is native to the dry areas of the southwest United States. Palmer has become a serious pest of cotton, soybean, and corn in the southeast and has become a major concern of farmers due to its resistance to glyphosate and ALS herbicides. This aggressive and destructive weed which adapts well to new environments can cause substantial crop loss in affected fields. Eradication of Palmer amaranth can become difficult once the weed is established. Palmer amaranth has been identified at ~30 sites in 14 counties of Pennsylvania.

A similar weed also in the pigweed family that is being found in Pennsylvania fields is Waterhemp. This includes Tall Waterhemp (*Amaranthus tuberculatus*) and Common Waterhemp (*Amaranthus rudis*), which are now often grouped as one species due to similarities in growth and habit. This weed is native to the Midwest United States and is now found from Texas to Maine. Waterhemp shows resistance to glyphosate and ALS herbicides, along with varying degrees of resistance to several other herbicides

groups including Group 5 (triazines), Group 14 (PPO's), Group 27 (HPPD inhibiting), and Group 4 (Auxins). Wetter areas are where it thrives, but it easily adapts to a variety of sites, especially those where the soil has been disturbed. Waterhemp has been found in 3 counties in Pennsylvania.

HOW ARE THESE WEEDS DIFFERENT FROM OTHER AGRICULTURAL WEEDS?

Both Palmer amaranth and Waterhemp are a concern for those growing agricultural crops in Pennsylvania since they have the potential to become major agronomic weeds in the Commonwealth. Because of the plants resistance to many herbicides, control needs to be started early in the growth cycle. Palmer amaranth can grow from 1-3" per day, with Waterhemp close behind at 1- 1.25' per day. Both plants have a long emergence period; actively growing from spring until frost, making it harder to control late emerging plants. They both are prolific seeders, with ~ 500,000 seeds produced by one female plant. If not controlled early, the quantity of herbicides used will significantly increase in areas where these plants are found. These invasive weeds are aggressive and competitive; making eradication difficult once they are established.

To read further about these invasive weeds you can visit [Penn State's Palmer Amaranth and Waterhemp; New Threats To Pennsylvania Agriculture](#) page.

IDENTIFICATION

There are several key identifying features to look for when trying to identify Palmer amaranth and Waterhemp:

Palmer amaranth-

- Smooth, hairless stem
- Leaves ovate, often diamond shaped
- Petiole often longer than the leaf
- Leaves may have a white watermark, or chevron on top of leaf
- Can often find a single hair in the leaf notch at the tip
- Very tall, often 8 ft +
- Poinsettia like habit
- Female flower stalk- 1-2'
- Female flowers prickly and rough to the touch



Palmer amaranth seedling

Source: University of Illinois Extension

Waterhemp-

- Smooth, hairless stem
- Leaves are long and lanceolate shaped
- Leaves often look waxy or glossy
- Usually 4-5', but may grow taller



Waterhemp seedling

Source: University of Illinois Extension

Over the past several years Palmer amaranth and Waterhemp have become more prevalent throughout the country possibly due to changes in farming practices. Reduced tillage, changes in pesticides and reduced cultivation for weed control have given these weeds an advantage in agricultural fields. Both plants are Dioecious, meaning that there are separate male and female plants. This allows for greater genetic diversity and is therefore easier for the plants to develop herbicide resistance.



Pigweeds left to right: smooth, redroot, Palmer (male), Palmer (female)
Photo: W. Curran, The Pennsylvania State University

WHAT CAN YOU DO?

- Educate yourself. Know how to identify Palmer amaranth and Waterhemp. Use Penn State's [Eight Key Points to Palmer Amaranth and Waterhemp Identification](#)
- Scout your property for signs of these invasive weeds.
- Be aware of the source and location of incoming used equipment and supplies (especially combines).
- Identify new populations and take action to limit the spread.
- Use Integrated Pest Management (IPM) and herbicides with different Modes of Action (MOA's) for prevention and control.
- Be diligent in preventing seed production. Prevention is preferred over eradication.
- Review the Best Management Practices (BMP's) for Palmer amaranth and Waterhemp [here](#).
- Request professional advise if you suspect these weeds on your property. Contact your local Penn State Extension or the PA Department of Agriculture.



Mature Palmer amaranth plant
Photo: J. Lenker, PA Department of Agriculture

FOR MORE INFORMATION OR TO REPORT POSSIBLE POPULATIONS OF PALMER AMARANTH OR WATERHEMP:

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the PA Department of Agriculture

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