

Palmer amaranth identification

Recent Palmer amaranth (*Amaranthus palmeri*) discoveries in fields planted to native seed mixes (e.g. pollinator and wildlife habitat) have land owners on high alert. Newly-seeded fields should be scouted for Palmer amaranth and steps be taken to preferably eliminate the newly introduced weed, or at minimum reduce seed production.

Palmer amaranth is a serious concern due to its fast growth, high competitiveness, prolific seed production, and resistance to multiple herbicides. Currently, Palmer amaranth has a very limited distribution across Iowa. Seed production within fields planted to conservation plantings may provide this weed an opportunity to move into Iowa crop fields.



Photo credit: Robert Hartzler



Photo credit: Meaghan Anderson

Palmer amaranth inflorescences: female (L); male (R). The large, sharp bracts on female plants are the definitive trait to tell Palmer amaranth apart from waterhemp.

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Palmer amaranth is closely related to waterhemp (*Amaranthus tuberculatus*); to the untrained eye the two species look very similar. Fields in which Palmer amaranth has been introduced are likely to contain both species. The following traits can distinguish these two species, and other weedy pigweeds.

1. Both Palmer amaranth and waterhemp have hairless stems.
2. Palmer amaranth usually has a much denser canopy than waterhemp.
3. Palmer amaranth will have some leaves with petioles longer than the leaf blade.
4. Seedheads of Palmer amaranth are usually longer and thicker than those of waterhemp.
5. Female Palmer amaranth flowers have large, sharp bracts that are painful to touch when mature.

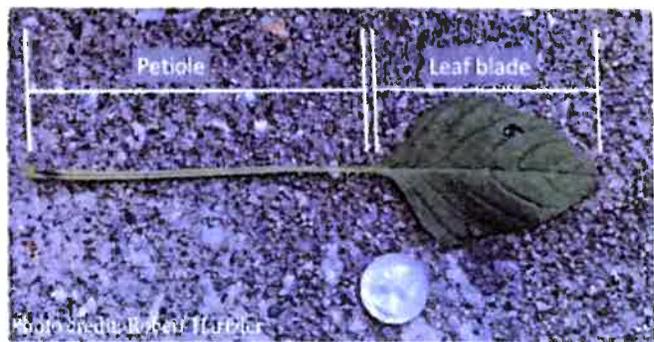


Photo credit: Robert Hartzler

A petiole longer than the leaf blade is the most reliable vegetative trait to distinguish the two pigweeds. Not all leaves on a Palmer amaranth will have this trait.



Photo credit: Robert Hartzler

Dense canopy of Palmer amaranth. The ends of stems often have a rosette appearance due to tightly clustered leaves.

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Palmer Amaranth: A New Threat

Palmer amaranth is native to the southwest US, but has recently moved into the Cornbelt. Compared to native pigweeds (*Amaranthus* species), Palmer amaranth poses unique management challenges. Therefore, preventing its spread into new areas is important. This bulletin provides information on differentiating Palmer amaranth from other pigweed species found in crop fields.

Both waterhemp and Palmer amaranth are highly variable in appearance. While there are differences in vegetative characteristics, these traits are not completely reliable due to the diversity within both species. Because of this, it is important to become familiar with the floral characteristics of both species.

Does the pigweed have a hairy stem?

Yes:

Redroot pigweed
Smooth pigweed
Powell amaranth



No:

Waterhemp
Palmer amaranth
Spiny amaranth



Spiny amaranth

Plants have long (up to 1/2"), sharp spines at nodes on the stem. These spines are sometimes mistaken for the sharp bracts on female Palmer amaranth plants.



Palmer amaranth

Vegetative traits:

Rounded leaves
Some leaves may have petioles longer than leaf blade.
Dense cluster of leaves at top of canopy.



Waterhemp

Vegetative traits:

Elongated leaves
Open canopy



Reproductive traits:

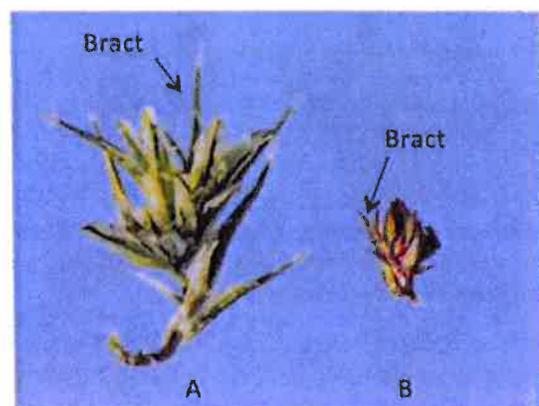
Both species are dioecious, having separate male and female plants. The inflorescences of both species are highly variable.

Palmer amaranth (A) generally have long terminal branches greater than a half inch in diameter.

Most waterhemp (B) have slender branches less than six inches in length; however, some plants produce long branches more than a half inch in diameter.



Female Palmer amaranth flowers (A) have a long (up to 1/4") bract that extends beyond the five tepals and seed capsule. The bracts become sharp at maturity, making female plants painful to handle.



Female waterhemp flowers (B) have a small bract that does not extend beyond the single tepal or seed capsule. Male plants have a short bract with five tepals.