

Pigweeds in Michigan

Keys to distinguishing Palmer amaranth from other species

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In Michigan the most common pigweed species encountered include Powell amaranth (*Amaranthus powellii*), redroot pigweed (*A. retroflexus*), and smooth pigweed (*A. hybridus*), however over the past several years we have seen the greater occurrence of common waterhemp (*A. rudis*) and the introduction of Palmer amaranth (*A. palmeri*). The increasing occurrence of glyphosate resistance in Palmer amaranth and common waterhemp has made it important, now more than ever before, to be able to tell the pigweeds apart. Characteristics that distinguish these species include: leaf hairs, stem texture, petiole length, bract spines, and reproductive features.

	Palmer amaranth	Powell amaranth	Redroot/ smooth pigweed	Waterhemp
Seedling leaf hair	yes	no	no	no
Stem	smooth	hairy	hairy	smooth
Petiole length	long (>1X leaf length)	short	short	short
Spiny bracts	yes (female)	no	no	no
Seed head	unbranched	branched, 4-8"	branched, 1-2"	unbranched
Reproductive	dioecious (separate male & female plants)	monoecious	monoecious	dioecious (separate male & female plants)

Seedling leaf hairs:

Often times small leaf hairs can be seen protruding from the tips of young Palmer amaranth leaves.



Palmer amaranth with leaf hair (left) and waterhemp without leaf hair (right)

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Stem appearance:



A. Hager

The stems of Palmer amaranth (left) and waterhemp (right) are smooth, whereas the stems of redroot pigweed, smooth pigweed and Powell amaranth are hairy (center)

Petiole length and bracts:



Elongated petioles and spiny bracts (female plants) are both characteristic of Palmer amaranth and not the other pigweeds

Seed heads and reproductive state:

The seed heads of Powell amaranth, redroot pigweed (center) and smooth pigweed are branched, whereas Palmer amaranth (left) and waterhemp (right) seed heads are unbranched. Palmer amaranth and waterhemp are the only species that have separate male and female plants (dioecious).



Palmer amaranth



Powell & redroot



Waterhemp

A. Hager