FACT SHEET • ANR-0077

CFAES

Pigweed Identification Guide

Reviewed by **Alyssa Essman**, Assistant Professor and Weed Science Specialist; College of Food, Agriculture, and Environmental Sciences; Horticulture and Crop Science, Ohio State University Extension

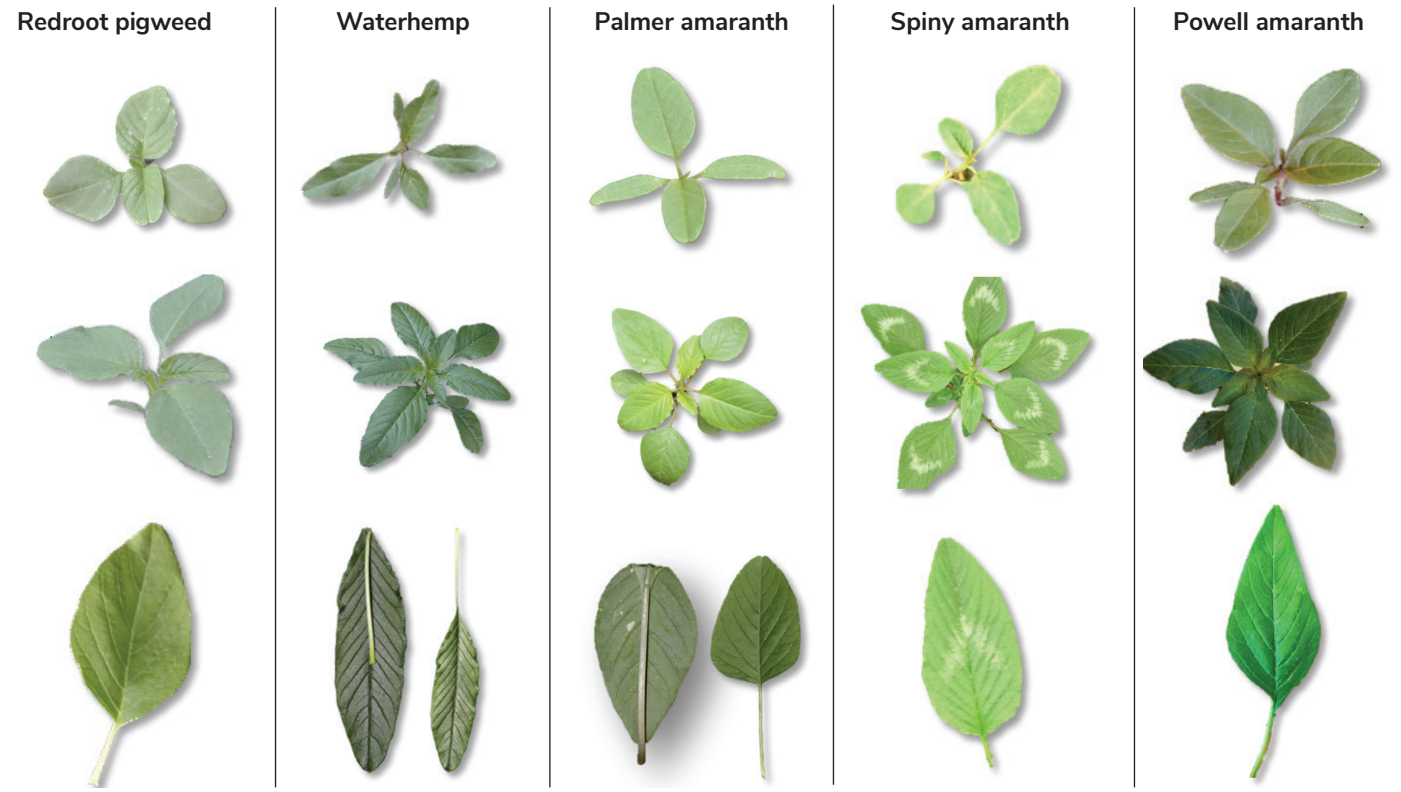
Plants in the pigweed or *Amaranthus* family are found across Ohio and can be difficult to differentiate from one another. Correct identification of these species is critical, as they present varying degrees of management and economic concern. Below are pictures and key identifiers for five of the most common and troublesome pigweed species in Ohio:

- redroot pigweed (*Amaranthus retroflexus*)
- waterhemp (*Amaranthus tuberculatus*)
- Palmer amaranth (*Amaranthus palmeri*)
- spiny amaranth (*Amaranthus spinosus*)
- Powell amaranth (*Amaranthus powellii*)

Smooth pigweed (*Amaranthus hybridus*) is another common species, similar in appearance to redroot pigweed, but has more sparsely distributed hair on the stem and a more highly branched flower. Pigweed species inhabit agronomic crop fields, pastures, hay fields, stream and ditch banks, fencerows, and landscapes.

Seedling and Vegetative Stages

Pigweed seedlings can be differentiated from one another by evaluating the cotyledons and first true leaves. Identification at this stage is important, as pigweeds are most effectively controlled when they are between 2 and 3 inches in height, and many herbicide labels require control by 4–6 inches in height. The first true leaves of redroot pigweed are rounder than the first true leaves of Powell amaranth. The first true leaves of spiny amaranth are often notched at the tip. Waterhemp and



The Ohio State University, Bruce Ackley (redroot pigweed, waterhemp, and Palmer amaranth); Clemson University (Spiny amaranth); Cornell University (Powell amaranth).

Figure 1. Seedlings and vegetation of commonly confused pigweed family species.

THE OHIO STATE UNIVERSITY
EXTENSION

COLLEGE OF FOOD, AGRICULTURAL, AND ENVIRONMENTAL SCIENCES
Horticulture and Crop Science
u.osu.edu/osuweeds

Redroot pigweed

- Hairy stem and leaves
- Rough, egg-shaped leaves
- Petioles often shorter than leaf

Waterhemp

- Hairless stem and leaves
- Long narrow leaves
- Petioles often shorter than leaf

Palmer amaranth

- Hairless stem and leaves
- Long ovate leaves may have watermark
- Sharp spinces at leaf nodes

Spiny amaranth

- Hairless stem and leaves
- Long ovate leaves, may have watermark
- Sharp spines at leaf nodes

Powell amaranth

- Sparsely hairy stem
- Diamond-shaped leaves
- Petioles can be longer than leaf

The Ohio State University, Bruce Ackley (redroot pigweed, waterhemp, and Palmer amaranth); Missouri University (Spiny amaranth), Cornell University (Powell amaranth).

Figure 2. Key identifying characteristics of five pigweed family species commonly found in Ohio.

Palmer amaranth have elongated cotyledons, and the first true leaves of waterhemp are longer and narrower than the first true leaves of Palmer amaranth, which are more egg-shaped.Photos showing the identifying characteristics of redroot pigweed, waterhemp, Palmer Amaranth, spiny amaranth, and Powell amaranth, which are pigweed species found in Ohio.

In the vegetative stage, pigweed species become more distinct from one another, and key identifying characteristics can be helpful in distinguishing between these species (**Figures 1 & 2**).

Reproductive Stages and Life Cycles

Reproductive structures can be helpful for identifying between species, especially for those that look similar in the seedling or vegetative stages. Redroot pigweed, spiny amaranth, and Powell amaranth are all monoecious, meaning male and female flowers exist on the same plant. Waterhemp and Palmer amaranth are dioecious and have male and female flowers on separate plants. Redroot pigweed seed heads are dense, compact clusters. The seed heads of spiny amaranth can occur at the tip of stems as well as at the base of the leaf petiole on the stem. Powell amaranth seed heads are sparsely branched and have bracts, which can make them rough to the touch. The seedheads of female Palmer amaranth plants are covered in spikes. Female waterhemp seed heads are long and branched without bracts or spines. These pigweed species are all summer annuals, and their life cycle begins with emergence in the spring. After flowering, pigweeds reproduce by seed, senesce, and end their life cycle in the fall.

Control

The control of plants in the pigweed family should be a priority, especially waterhemp and Palmer amaranth. These species in particular are competitive, aggressive, and many populations have developed resistance to several of the most effective herbicide control options. Waterhemp and Palmer amaranth present a serious threat to yields and the economic sustainability of agronomic operations. For chemical and other control options that manage these pigweed species, see the *2024 Weed Control Guide for Ohio, Indiana, Illinois, and Missouri* (OSU ANR-789) or contact local Ohio State University Extension personnel for recommendations.

For more information about managing weeds, visit OSU Weed Management at **u.osu.edu/osuweeds**.

Originally written by Bruce Ackley and Mark Loux, Horticulture and Crop Science, The Ohio State University, on August 16, 2019.

For an accessible format of this publication, visit cfaes.osu.edu/accessibility or read online at **ohioline.osu.edu/factsheet/anr-0077**.

Supported by:

OHIO SOYBEAN COUNCIL