

Mature Pigweed Identification

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Pigweed species are most easily identified when they are nearing maturity. The flowering structures of pigweeds are relatively distinct for each individual species. The flowering structure (seedheads) of many pigweeds is a series of flowering branches with few to no leaves. They typically vary between species by their length, diameter, degree of branching and shape. At harvest time, it is helpful to correctly identify the pigweeds in your fields. This information can provide changes in next year's weed management program to better control pigweeds.

The following are some guidelines to help with pigweed identification. It should be noted, however, that there is often physical variation within species and that crossing can occur within some species of pigweed, resulting in hybrid plants. Pigweeds will not always express specific traits of one parent species, but may express a combination of both.

Smooth pigweed (*Amaranthus hybridus*)

- Plants will have very small fine hairs throughout.
- Flowering structure is highly branched (**Figure 1**).
- Flowering stems are the shortest of the pigweeds (< 1.5") (**Figure 1**).
- Easily distinguished from redroot pigweed only in mature stages.

Redroot pigweed (*Amaranthus retroflexus*)

- Very fine hairs are often found throughout the plant, though stems below the cotyledons can be smooth.
- Flowering structure is branched, with many thick, flowering stems that range from 4 to 7 inches in length (**Figures 1 and 2**).
- Leaf and stem surfaces are rough.



Figure 1. Seedheads of Smooth and Redroot pigweed.



Figure 2. Seedhead comparison of commonly found pigweeds in Tennessee.

Slender pigweed, also known as Green pigweed (*Amaranthus gracilis*) or (*Amaranthus viridis*)

- Flowering stems are typically small, less than 3 inches long (**Figure 2**).

- Developing flowering structures are distinct from other pigweeds. They resemble an unfertilized grape vine (**Figure 3**).
- Leaves are egg-shaped and notched at the tip (**Figure 3**).
- Leaves and stems are hairless.
- The leaf surface has a rough texture and some times contains a v-shaped variegation (having marks or patches of varied colors or shades of one color), also called a watermark (**Figure 4**).



Figure 3. Seedhead of slender pigweed.



Figure 4. Illustration of slender pigweed growth habit.

Palmer pigweed (*Amaranthus palmeri*)

- Flowering stems are the longest (1 to 2 feet) of the pigweeds (**Figures 2 and 5**).
- The petioles (the stalk of the leaf blade) are typically longer than the leaf blades.
- Leaves of Palmer are wider than waterhemp leaves.
- Later leaves may occasionally have a white or red v-shaped variegation (watermark).
- The back of leaves is usually waxy.



Figure 5. Male flowering structure of Palmer amaranth and Common waterhemp.



Figure 6. Seedhead comparison of Palmer amaranth and Common waterhemp.

Common waterhemp (*Amaranthus rudis*) and tall waterhemp (*A. tuberculatus*)

- Flowering stems are highly branched, narrow and typically 4 to 6 inches long (**Figure 6**).
- Leaves and stems are completely hairless, very smooth and waxy in appearance.
- Leaves are long and typically narrow (**Figure 7**).
- Plants are more slender than Palmer and have more branching (**Figure 8**).

Spiny amaranth (*Amaranthus spinosus*)

- Sharp spines, 2 to 4 in number, occur at nodes (points of leaf attachment to stems) (**Figure 9**).
- Leaves often have v-shaped variegation.
- Stems are hairless and smooth.
- Flowering structure is much less branched than other pigweeds (**Figure 10**).
- Flowering stems are 2 to 4 inches long (**Figure 10**).



Figure 7. Leaf comparison of Palmer amaranth and common waterhemp.



Figure 9. Illustration of nodal spines of spiny amaranth.



Figure 8. Contrasting growth habits of Palmer amaranth and Common waterhemp.



Figure 10. Mature spiny amaranth with seedheads.

References:

Gleason, H. A. and A. Cronquist. 1963. **Manual of plants.** 280-282.

Horak, M. J., D. E. Peterson, D. J. Chessman and L. M. Wax. 1994. **Pigweed identification: A pictorial guide to the common pigweeds of the**

Great Plains. Publication S80. Manhattan, KS: Kansas Cooperative Extension Service.

Sauer, J. 1956. **Recent migration and evolution of the dioecious amaranths.** Evolution 11:11-31.

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