

# Identification and Management of Palmer Amaranth in South Dakota



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## Palmer Amaranth

Palmer amaranth is an aggressive weed that can be resistant to multiple herbicide sites of action. This weed is native to the southwest U.S. and Mexico but is slowly making its way north.

Proper identification is an important component of managing this weed. Palmer amaranth is from the pigweed family and therefore can be mistaken for waterhemp, redroot pigweed, prostrate pigweed, and other common pigweeds that occur in South Dakota.

Palmer amaranth has a number of distinguishing characteristics that can help accurately identify it.

### 1. Hairless, Smooth Stem



Palmer amaranth (above) and waterhemp are two pigweed species that have smooth hairless stems.

## 2. Leaf Shape



The leaf shape of amaranth can vary within species. However, typically, the leaf shape of Palmer amaranth is wider, ovate or diamond shaped. Waterhemp leaves are generally longer, linear, or lanceolate in shape.

## 3. Long Petiole Length



Palmer amaranth is the only species of pigweed whose petiole is longer than the leaf blade. This characteristic becomes more noticeable as the plant matures and the petiole continues to grow. The above, (right) photo shows the petiole folded back over the leaf, depicting its length as compared to the leaf blade.

## 4. Reproductive Traits



The flowering structure of Palmer amaranth can be 1 to 3 feet long and is often not branched. Palmer amaranth is dioecious, meaning plants are either female or male. Pollen is produced on the male plant and blown to the female, where seed is produced.

## 5. Female Plants have Spiny Bracts



Female plants have spiny bracts at leaf axils (where the petiole meets the stem-shown above) and the seed head is prickly and rough to handle. The male seed head is smooth.

## Reason for Concern

Palmer amaranth is a risk to crop production in South Dakota because of its competitive growth habit, season long emergence (during the warm season), prolific seed production, and potential to have resistance to multiple sites of action.

## Management Tactics

### Integrated Management

- Use clean seed from a reputable source.
- Add a small grain cash or forage crop such as oats, wheat, or rye to your cropping rotation.
- Decrease row width and increase seeding rate. Palmer amaranth relies on light to germinate; a closed canopy will limit germination.
- Scout fields throughout the growing season for weed emergence before and after herbicide application.
- Incorporate cover crops to increase natural competition as your crop rotation allows.
- Hand weed small infestations.
- Do not combine through mature palmer patches.
- Clean equipment after use in infested areas.

### Chemical Weed Control

- Always rotate herbicide sites of action.
- Use both residual pre and post emergent herbicides.
- A fall or early spring pre application, followed by a planting time or early post emerge application of a residual herbicide, may be necessary to assure activation and season long control.
- Apply post emergent herbicides when weeds are at or below label height or growth stage.
- Multiple sites of action and multiple application timings may be necessary to extend the control period.

## **Soil health principles that help suppress weed emergence**

- Keep soil covered.
- Limit disturbance to soil.
- Keep a living root in the soil for as long as possible.
- Implement a diverse crop rotation that includes warm and cool season grasses as well as broadleaf plants.

Be aware that Palmer amaranth is spread through seed, manure, wildlife, feed, and equipment. As of September 2, 2019, Palmer amaranth seed is included on South Dakota's list of prohibited noxious weed seeds. This means seed for sale within South Dakota is not permitted to contain Palmer amaranth seed in any amount.

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## **Photographs**

Photo credits Ruth Beck

## **References**

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Ikley, J., Jenks, B., 2019. Identification, Biology and Control of Palmer Amaranth and Waterhemp in North Dakota. NDSU Extension

How to Identify Palmer Amaranth. [www.ag.ndsu.edu/palmeramaranth](http://www.ag.ndsu.edu/palmeramaranth)

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