



Palmer amaranth Management Guide



Attn: John Pauley
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The
Palmer
Project

SIMPSON COLLEGE

Get prepared for Palmer amaranth!
Join us at our conference:

Combating Herbicide Resistant Weeds and Palmer Amaranth: *Multiple Perspectives*

Jan 4, 5, & 6, 2018

Join producers, scholars, agronomists, extension officers, distributors, students, policymakers, industry officials or any interested persons for an informational, 3-day conference about Palmer amaranth and herbicide resistant weeds.

Early Deadline (November 30, 2017):

- Faculty, gov't employee, industry professional - \$150
- Graduate student - \$50
- Undergraduate or high school student - \$10
- Producer - \$75

After November 30, 2017

- Faculty, gov't employee, industry professional - \$200
- Graduate student - \$75
- Undergraduate or high school student - \$25
- Producer - \$125

A mail-in registration form is on the back of this panel. For postage-free registration, or to submit an abstract to present at the conference, go to:
www.Simpson.edu/the-palmer-project/

is palmeri Identification Guide

Palmer amaranth is one species in a family of many pigweeds, so it may be difficult to distinguish. These distinguishing characteristics will help you identify it.



Palmer plants are hairless on their leaves, stems and petioles. Mature plants develop thorny bracts at growth points, as pictured left.

Photo from Univ. of Minnesota

Mature Palmer amaranth plants have a petiole which is longer than the leaves (right.)



Photo from Purdue University



Palmer (left, top) canopies in a symmetrical pattern and has ovate leaves, versus waterhemp with longer, narrower leaves (left, bottom.)

Photos from Univ. of IL and Purdue Univ.

Seedling leaves of Palmer amaranth (below, left) are fuller and rounder in shape than the leaves of waterhemp (right.) Also note the dull surface of Palmer leaves vs. waxy waterhemp leaves.



Palmer amaranth versus Waterhemp, photo from Univ. of IL.



Palmer amaranth plants may have white or light green "chevron" markings on the leaves. This marking is unique to Palmer, however not all Palmer has it.

Photo from Minnesota Dept. of Ag.

Amaranthus palmeri

Palmer is a BIG Deal Management Strategies

- The Weed Science Society of America has identified Palmer Amaranth as the #1 most troublesome weed (WSSA, 2016.)
- Palmer can grow 2-3 inches in a day and emerges May-Sept in the Midwest.
- A mature plant can produce 500,000 seeds which remain viable for 3-5 years.
- Palmer is highly adaptable and capable of developing multiple herbicide resistances.
- An infestation of Palmer amaranth can lead to yield losses up to 91% for corn and 79% for soy. (NRCS, USDA 2017.)

Problem Areas to Watch

Make sure to monitor the following hot-spots for Palmer amaranth:

- **Road Ditches**
Ditches hold some of the largest seed-banks for Palmer, as observed in Kansas and Indiana, and threaten nearby fields.
- **CRP Plots**
Palmer seed has been found in two conservation seed mixes. Make sure to buy certified seed.
- **Waterways and Buffers**
These areas are typically difficult to spray or manage, but are critical. Palmer seed can spread via currents as well as migratory waterfowl.
- **Unplanted End-rows & Fencerows**
Portions of fields that are uncropped, unsprayed or have more compaction have less competition.
- **Pasture and Fallow Fields**
These are often unmanaged and unmonitored.



A collaborative effort is imperative for controlling the spread of Palmer. Communicate with your neighbors and area landowners to "stay on top" of it.

- Hand pulling Palmer is the most effective way to manage it. Strains have already been found with resistance to multiple herbicides including ALS, Glyphosate, Atrazine and Dicamba.
- Aim to pick Palmer before it produces seed. If it has already set seed, transport the plants in plastic bags or barrels. Do not leave an uprooted plant on the ground as it can re-root.
- It is imperative to change your herbicide program at least every three years to prevent the development of resistance. Ensure you are changing the herbicide program's Sites of Action.
- Gravel road dust on plant leaves can hinder the efficacy of herbicides and accelerate the development of herbicide resistance. Consider planting a few rows of buffer between crop fields and gravel roads.
- Be wary of shared equipment as it may be contaminated with seeds. Clean equipment regularly and avoid planting crop fields with the same planter as used for CRP.
- If you take land out of production, it is recommended to establish it with CRP, native or similar grasses that can compete against weeds.
- Cover crops can suppress weed pressure by choking out seedlings and seed banks.
- As of July 1st, 2017, Palmer amaranth is a noxious weed in the state of Iowa.



- Mowing or cutting Palmer can prevent it from setting seed, but may not kill it. When cut, Palmer tends to resprout in a bush-like form (left.)

The Palmer Project is sponsored in part by:



About the Project

The Palmer Project is an interdisciplinary research initiative to model and understand the spread of Palmer Amaranth and herbicide resistance in the Greater Midwest.

Research began in 2015 as part of the Bryan Summer Research Program in Mathematics at Simpson College. The team worked to create a mathematical model to simulate the spread of superweed Palmer amaranth across Iowa. The scope of the project quickly expanded to include a qualitative research component.



Simpson College Alumni Park Mickels coding the model

Current Objectives:

- Create a model which calculates the relative risk for infestation of each county in Iowa based on factors including infestation proximity, soil type and more.
- Interview farmers in order to construct a cultural and societal understanding about the threat of herbicide resistance.
- An awareness campaign to educate about the threat of Palmer Amaranth as well as effective weed management strategies.

Contact Us

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www.Simpson.edu/the-palmer-project/



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Conference Registration Form

Name: _____

Affiliation/Business: _____

City, State: _____

Phone: _____

Email: _____

Date of registration: _____

Names of additional registrants (if applicable):

1: _____

2: _____

3: _____

4: _____

Number and type of registrants:

Early Registration price/Price after Nov. 30

___ Producer \$75/125

___ Faculty, Govt., Industry professional \$150/200

___ Graduate student \$50/75

___ Undergraduate, High School Student \$10/25

Registration Fee(s) total: _____

Payment:

- Cash Enclosed
 Check* At Check-In
 Credit/Debit

Card #: _____

Security Code: _____ Exp: ____/____

Mail registration form to:

Attn: Clint Meyer
701 N. C St
Indianola, IA 50125

*Make checks to Simpson College