Introduction of Palmer Amaranth into Iowa and Minnesota: Lessons Learned

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Online Resources

www.mda.state.mn.us/weedcontrol

http://z.umn.edu/palmerid

https://crops.extension.iastate.edu/search/content/palmer%20amaranth
Palmer Amaranth Background

- Native to the southwestern US and NW Mexico
- Annual with high seed production
- Dioecious – both male and female plants
- Reproduces by seed – estimated up to ½ million/plant
- Has developed resistance to several important herbicide groups
- Movement into new areas by seed, farm equipment, livestock, manure, feed and forages, wildlife, etc.
History in Iowa & Minnesota

Iowa

• Fall 2013 - First confirmed in Harrison County
  – Eventually confirmed in Fremont, Lee, Page and Muscatine Counties
  – Iowa State Extension greatly increases efforts to educate farmers and landowners
• 2016 – 25 additional counties discovered in CRP plantings
• 2017 – 50 counties with documented Palmer
• Palmer entering the state through several pathways
  – Landowners are trying to aggressively manage and eradicate Palmer from their fields
• Added Palmer Amaranth to the Noxious Weed Seed List
2013 – 2015
5 Counties

2016
30 Counties

2017 – 2018
Over 50 Counties
History in Iowa & Minnesota

Minnesota

- **2014** – MN Listed Palmer as a Prohibited Eradicate Noxious Weed
- **2016** – First confirmed in Yellow Medicine and Lyon Counties through CRP seed (33 fields confirmed)
  - Listed Palmer as a Prohibited Noxious Weed Seed
- **2017** – Todd and Douglas Counties – Also CRP Seed (9 fields confirmed)
- **2018** – **SPRING** - Palmer seed found in CRP seed lot planted in 4 NW MN Counties (14 Plantings)
  - **No Palmer** found growing in these plantings in 2018
  - **FALL** - Palmer discovered for the **first time** in row crops
    - Soybean field in Redwood (1 Female and 3 Male Plants) and Jackson (1 Female Plant) Counties
      - All plants destroyed, no seed discovered
      - 5 Mile Radius survey in both counties – **no additional Palmer found**
History in Iowa & Minnesota

Minnesota

• 2016 - MDA declares Palmer amaranth an agricultural emergency
  – adopts a zero tolerance/eradication policy for Palmer amaranth
  – Increased Seed Testing for Palmer amaranth
• U of M Extension increases outreach to farmers, crop consultants and non-agricultural landowners
• MDA and U of M are working together to prevent new infestations and eradicate existing populations on a site-by-site basis
  – Developed coordinated process for ID, Reporting, BMP’s, etc.
• MDA / U of M to host a Palmer summit in St. Paul – January 2019
  • Public and private stakeholders
  • Invite to neighboring states
  • Identify Pathways
  • Develop a strategic response plan
  – Could be adopted to future weed issues in agronomic and non-ag situations
2016
2 Counties
33 Sites

2017
4 Counties
42 Sites

2018
6 Counties
44 Sites
MDA Ag Pest Survey 2015 - 2018

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<tr>
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<th>2015</th>
<th>2016</th>
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<tbody>
<tr>
<td>Soybean</td>
<td>467</td>
<td>232</td>
<td>215</td>
<td>89</td>
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<td>Counties</td>
<td>67</td>
<td>40</td>
<td>20</td>
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- Palmer was not found in fields surveyed
MN Seed Testing Program

• Seed Program used funds to develop a single-seed test to determine if amaranth seed found in samples contained Palmer amaranth
  • Since this initial test was developed, a seed assay test now exists.

• Work closely with Seed Industry, USDA, BWSR, MNDOT, DNR, Pheasants Forever, others… to obtain native seed sample of components and mixes before planting and at the planting site
  • If amaranth present - obtain representative sample for genetic testing
  • Train organizations to review sourcing paperwork, labels, and laboratory testing records for origin source and ENSURE that Palmer documentation is in place when amaranth seed present in sample

• Working with interagency group (state, federal, Industry & non-profits) to develop BMP’s for seed sourcing and screening.
Q: How many Amaranth seeds are on this dime?
A: ~70 seeds, making finding contamination of crop seed lots a real challenge.
Q: How many Amaranth seeds are in this container?
A: 43,560 – Therefore seed source contamination is a major concern.
SITE ASSESSMENTS AND MANAGEMENT

• **MDA HAS COORDINATED:**
  • 2016 Fall burns (flame weeding); intensive scouting
  • 2017 Spring/fall flame weeding and running burns
    • herbicide applications (Milestone®)
    • Field Scouting and hand-pulling (assistance by landowners)
  • 2018 Spring/fall running burns, spring/fall flame weeding, spring/summer/fall scouting
• **2019:**
  • Intensive Scouting and Treatments: Hand-pulling; cutting; mowing; flame weeding; field burns; herbicides
Flame Treatments
Field Scouting and Survey
Increased Seed Sampling Statewide
Lessons Learned

• “It takes a Village”!!!!!!!!!!!!
  – Coordination and communication between Iowa and MN (and all neighboring states)
  – Coordination between Extension and State Agriculture Department
  – Assistance by state/federal agencies, university extension and farmers
  – Education and familiarization with Palmer by landowners and farmers is key to finding plants

• Agriculture doesn’t operate within a specified geographic boundary
  – One state’s or county’s laws may not coincide with another
    • Need for a national strategy

• Palmer has MANY pathways of spread
  – Seed, grain, forage, feed, vehicles and farm implements, livestock movement, manure, wildlife (waterfowl), ag drainage systems, utility work (pipelines through ag lands), etc.

• Developing a zero-tolerance attitude early on may help lessen statewide impacts
  – Eradication focus on a site-by-site basis

• Promote more robust agronomic practices
  – Adopt some of the more traditional practices like rouging weeds, adjusting planting dates, herbicide management, crop rotations, etc.

• Strong Extension presence
  – Putting the problem and potential solution in front of the agricultural community
    • Engaging farmers to be proactive and the eyes and ears for success
    • Engaging commodity groups to support efforts to prevent herbicide resistance
Zero Tolerance Approach!

Iowa farmer has established a network of neighbors and other volunteers to help pull Palmer plants, pile and burn them.
What Happens When Palmer Not Taken Seriously?

Industrial site in Council Bluffs, Iowa where Palmer is growing and unmanaged
Native Vegetation is Our Friend!
Space and Openness is Not!