DEPARTMENT OF AGRICULTURE

Palmer Amaranth in Commercial Feed 2023 Pilot Summary Report

A summary of the sample collection and findings for the 2023 pilot study on the risk of Palmer amaranth in the Minnesota commercial feed supply

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Purpose and Background

Palmer amaranth (*Amaranthus palmeri*) is a prohibited noxious weed that has developed resistance to multiple classes of herbicides and can cause extensive crop losses. Palmer amaranth is documented in 28 states including Iowa, South Dakota, and Wisconsin, but has yet to become widely established in Minnesota. The plant invades new areas when its seed is unintentionally transported through several key pathways. The goal of this pilot program is to better understand the risk for Palmer amaranth spreading through feed pathways, raise awareness, help find solutions to prevent its spread, and to protect agricultural operations throughout the state.

The Minnesota Department of Agriculture (MDA) regulates noxious weeds in animal feed using multiple tools:

- The Minnesota Commercial Feed Law prohibits the sale of adulterated feed.
- The Minnesota's Noxious Weed Law prohibits the transportation, propagation, or sale of noxious weeds.
- The Minnesota Seed Law and Screenings Act prohibits or restricts noxious weed seeds in seed lots or in screenings. Screenings are a byproduct of seed production which may be used as feed.

At this time, the MDA recommends following the USDA standard for Niger seed devitalization as a heat treatment to devitalize weed seeds including Palmer amaranth in feed or feed ingredients.

Traceback investigations from infested sites in Minnesota have identified millet and sunflowers as possible higher risk commodities for the spread of Palmer amaranth. This pilot program focused on these whole grain commodities by collecting commercial feed and feed ingredient samples from feed manufacturing facilities.

Inspection and Sample Collection

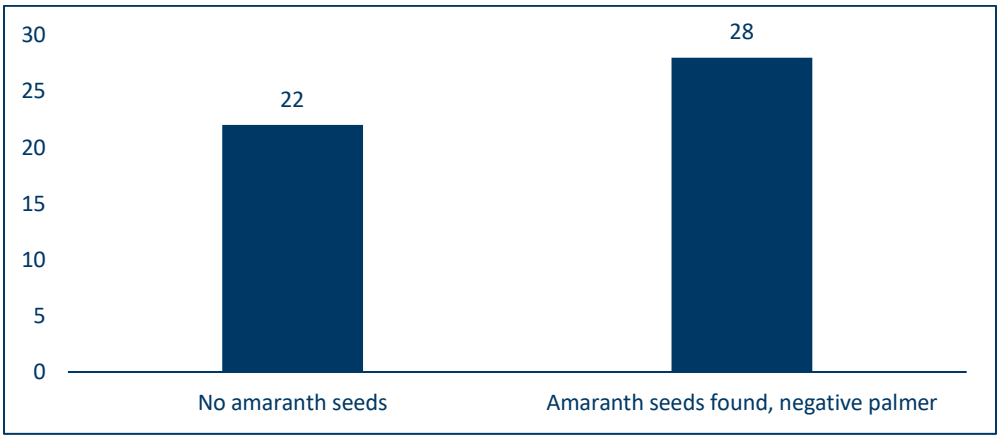
In August 2023, the MDA notified feed manufacturing facilities that seed and feed inspectors would be conducting joint inspections to collect feed samples and test them for noxious weed seeds with the goal of understanding the risk for Palmer amaranth in feed pathways. Prior to conducting inspections, the MDA held a meeting and presented the pilot program to stakeholders. A factsheet was also posted to the MDA website: www.mda.state.mn.us/plants-insects/palmer-amaranth-location-sources

In September and October 2023, inspectors from the Commercial Feed Program and Seed Regulatory Program jointly conducted inspections at 16 sites. Inspectors from the two programs worked together from a list of higher-risk commodities to determine what to sample at each site and collected 50 total samples throughout the pilot program. Standard procedures were used for sampling a minimum 500-gram sample that was representative of commercial feed and/or feed ingredient.

Sample Testing and Results

Feed samples were submitted to the MDA Plant and Seed Analysis lab for testing. Analysts visually inspected each sample for amaranth seeds using the Association of Official Seed Analyst (AOSA) rules and submitted any amaranth seeds found for genetic testing to determine if Palmer amaranth was present. Visual examinations found 28 samples contained seeds from amaranth species. After further genetic testing, the 28 samples were negative for Palmer amaranth.

Figure 1. Amaranth seed testing results of the 50 total feed samples.



Minnesota noxious weed seeds were found in 10 samples; three samples contained prohibited noxious weed seeds, one contained both prohibited and restricted noxious weed seeds, and six contained restricted noxious weed seeds. All samples that contained restricted noxious weed seeds were within the legal limit for feed lots (less than 90 seeds per pound).

The Minnesota prohibited noxious weed seeds found in the samples included Canada thistle (*Cirsium arvense*) and field bindweed (*Convolvulus arvensis*). These prohibited noxious weed seeds were tested for viability (to see if they were living) using a tetrazolium test. All these samples contained at least one viable prohibited noxious weed seed. There is zero tolerance for prohibited noxious weed seeds because it is an unlawful act in the Minnesota Feed Law. Two out of the four samples that contained prohibited noxious weed seeds were feed ingredients and not finished feed products. The MDA mailed a package to all inspected firms that included a cover letter with contact information, sample reports, and lab testing results. The sample reports only stated the findings and did not make any regulatory determinations, leaving any follow-up actions up to the inspected firms.

Next Steps for the Pilot Program

The Commercial Feed Program and Seed Regulatory Program will meet in early summer 2024 to discuss the next steps for the pilot program, incorporating valuable insights from stakeholders and staff. The MDA remains steadfast in its commitment to mitigating the risk of herbicide-resistant weeds infiltrating the state, while also focusing on reducing potential future impacts and costs to agriculture. The Commercial Feed and Seed Programs will build on the positive outcomes observed through the collaborative efforts of the pilot program to provide ongoing support to Minnesota's agriculture industries.