DEPARTMENT OF AGRICULTURE

2021 Noxious and Invasive Weed Program Annual Report

Plant Protection Division

Prepared March 2022

Noxious Weed Law

Noxious Weed List

The Noxious Weed Advisory Committee (NWAC) advises the commissioner of agriculture regarding invasive plants and regulated noxious weeds. NWAC has two basic functions:

- To review plant species that are either known to be are are potentially harmful to the state of Minnesota
- To advise the commissioner regarding policy and procedures to prevent the introduction of new noxious weed species into Minnesota and how to manage noxious weeds throughout the state.

NWAC did not make any changes to the Noxious Weed List in 2021. The list will be updated in January 2023.

For legal descriptions of each category in the Noxious Weed List and descriptions of each species, please visit www.mda.state.mn.us/noxiousweedlist

New County Finds of Prohibited Eradicate Species

In 2021, the Minnesota Department of Agriculture (MDA) confirmed six Prohibited Eradicate species for the first time in 14 counties (Table 1). The MDA verifies the reports and, when possible, collects samples for the official University of Minnesota herbarium records.

Table 1. New County Detections of Prohibited Eradicate Species

Species	County
Brown knapweed (*Centaurea jacea*)	Washington
Common teasel (*Dipsacus fullonum*)	Dakota, Ramsey, Yellow Medicine
Cutleaf teasel (*Dipsacus laciniatus*)	St. Louis
Meadow knapweed (*Cenaurea x moncktonii*)	Dakota
Palmer amaranth (*Amarannthus palmeri*)	Clay, Goodhue, Polk
Poison hemlock (*Conium maculatum*)	Brown, Le Sueur, Lyon, Mower, Washington

New Pest Case Management System

After several years of development, the MDA's Noxious and Invasive Weed Program (NIWP) has developed a Pest Case Management System (PCMS) in cooperation with partners in the MDA's Plant Protection Division (PPD). As part of completing the system, the former Arrest the Pest website was upgraded to work with the system and renamed Report a Pest. The PCMS allows the public and PPD stakeholders to report suspected pest infestations online and then allows PPD staff to create individual case actions when species of concern are documented through these reports. Any pest species can be entered (Figure 1).

The NIWP is currently using the PCMS for Palmer amaranth data but will be incorporating all listed noxious weeds into the system in 2022. Whether it is a requested plant identification or a weed complaint, NIWP staff will be able to create individual case files and add to them as necessary over time. The other unique thing about the PCMS is that it works with Minnesota data that is being entered into EDDMapS and ISMTrack databases. This will allow location and management data to be pulled from both databases into the PCMS and allow staff to develop and associate case data for regulatory actions and other purposes that will be associated with those locations. As new species of concern continue to grow in Minnesota, the PCMS will allow the NIWP to track data more efficiently.

Beginning in 2022, the MDA is asking all of our enforcement partners, program stakeholders, and the public to begin reporting noxious weeds, unknown plants, and species of concern through the Report a Pest portal on the MDA website.

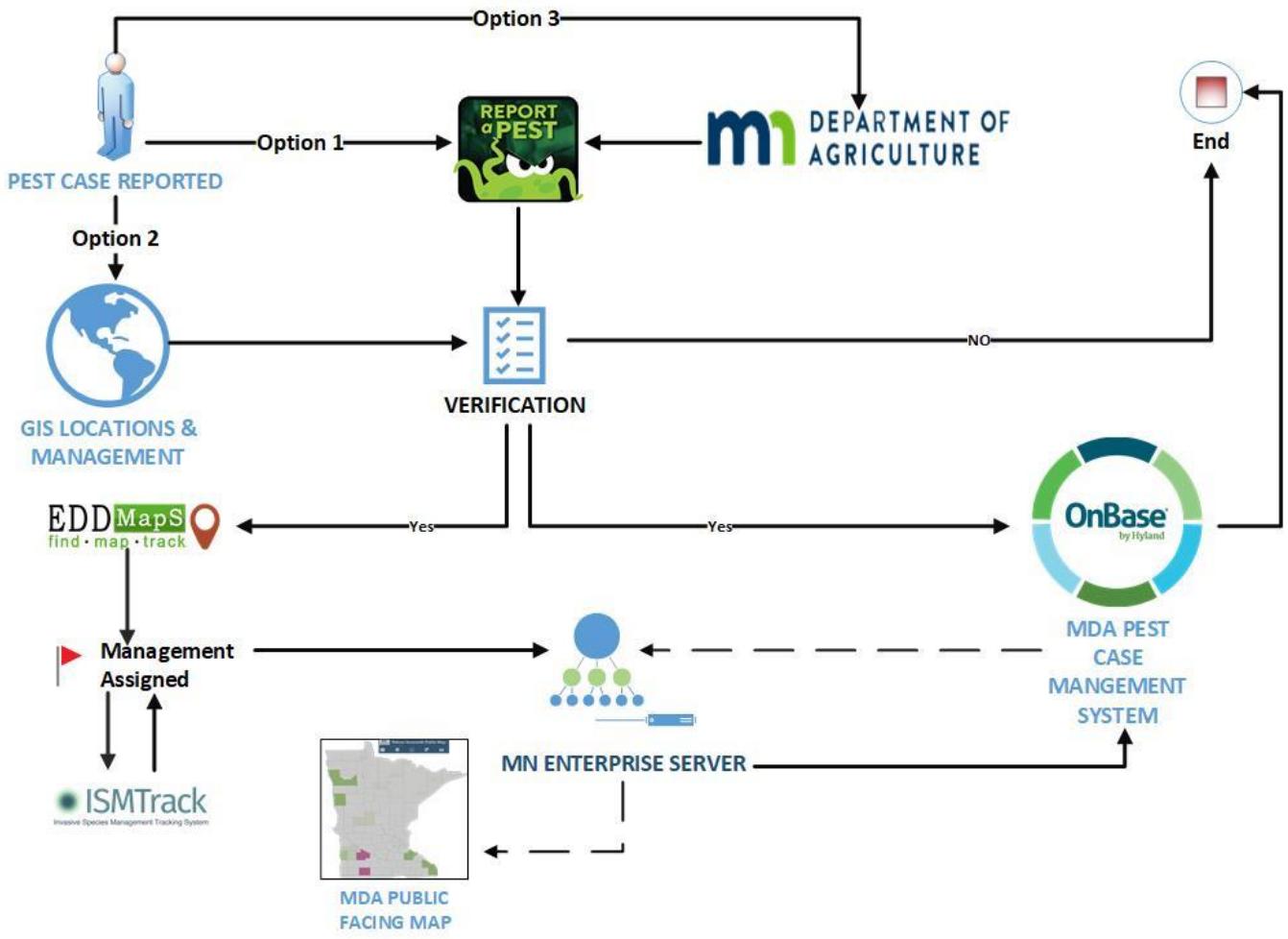

Figure 1. Flowchart of the Pest Case Management System.

Program Operations

The Noxious and Invasive Weed Program collects data on various aspects related to weeds, such as acres treated, Report a Pest inquiries, and management activities. The data is used to determine trends and documented in legislative reports. In 2021, the Noxious and Invasive Weed Program:

- Trained 15 new County Agricultural Inspectors (CAI) on the noxious weed law, weed law enforcement, and CAI duties.
- Conducted seven terrestrial plant risk assessments with the Noxious Weed Advisory Committee.
- Confirmed 557 reports of Prohibited Eradicate species, resulting in 919 infested acres of Prohibited Eradicate species.
- Treated 2,157 acres of noxious weeds with 585 management activities.
- Responded to 166 Report a Pest inquiries, resulting in 21 positive identifications of noxious weeds.

Weed Biocontrol

For leafy spurge biocontrol, the greatest number of adult leafy spurge beetles (*Aphthona lacertosa*) emerge when the soil warms gradually and the weather in June is sunny and warm but not extremely hot. Last summer was the hottest for Minnesota with June being 7.1 degrees warmer than average in the Twin Cities. This likely negatively affected beetle development. Few beetles were collected and released in new locations.

Drought levels increased as summer progressed. Although spotted knapweed generally does well in dry conditions, biological control may have negatively impacted its ability to cope with extreme drought conditions. The impact of this drought on the biological control agents is unknown. In Figure 2, spotted knapweed is in two ditches in Meeker County on July 13, 2021. Root weevils (*Cyphocleonus achates*) were released in 2017 at the location on the left. Knapweed plants look stunted and few are flowering. At a ditch nearby where no root weevils were released, many knapweed plants are standard height and flowering (right).

Figure 2. Spotted knapweed stunted by root weevils on the left and spotted knapweed growing normally on the right.

Survey

Poison hemlock was found at a few locations along Highway 14 in 2020. This prompted an extensive survey along Highway 14 in 2021 from Rochester to the South Dakota border. Three people surveyed different sections of the highway. A new infestation concentration was found in the Walnut Grove area along Plum Creek.

Prior to the 2021 poison hemlock survey, there were two poison hemlock reports in the area. There were numerous important finds along Plum Creek in the Walnut Grove area during the 2021 survey. Figure 4 below shows the finds in this area.

Figure 3. A poison hemlock plant with white flowers along a roadway.

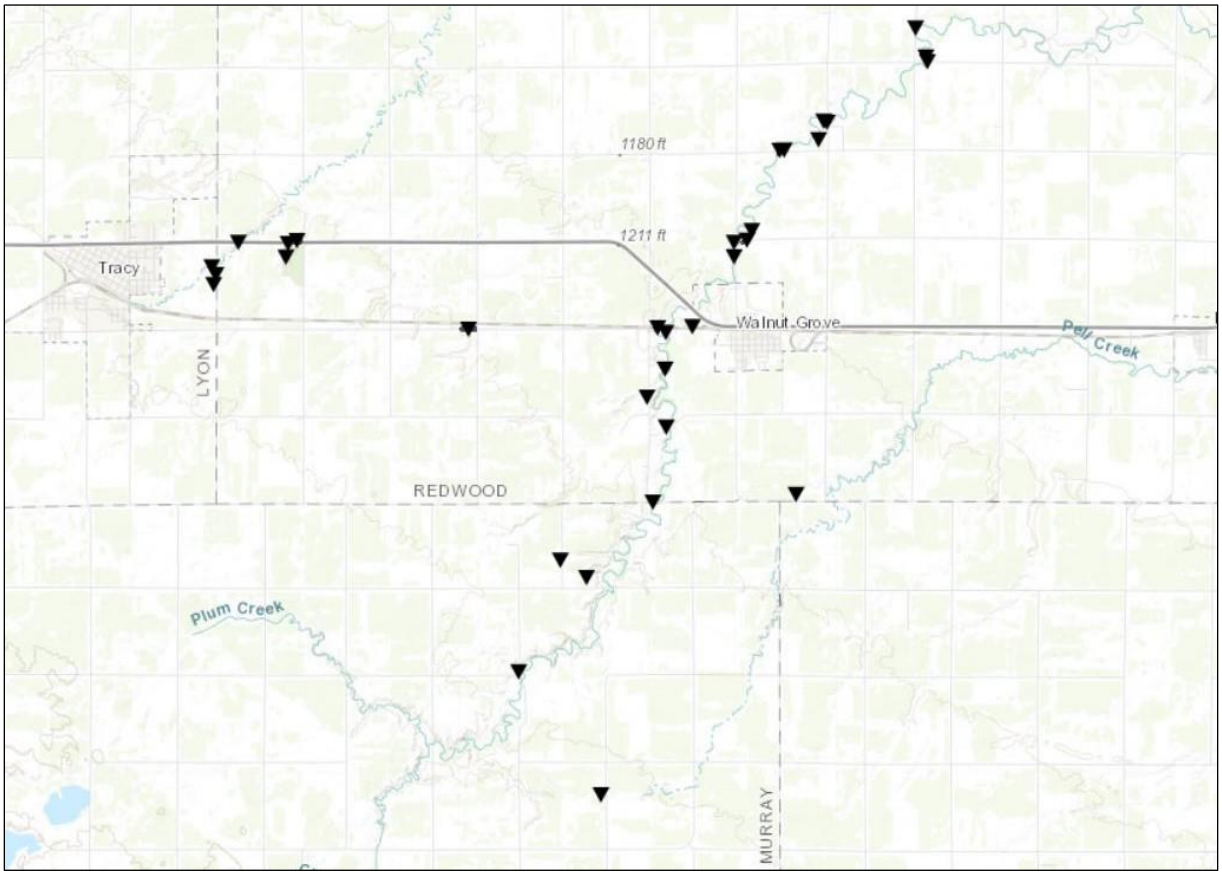

Figure 4. Poison hemlock detections near the intersection of Cottonwood, Lyon, Murray, and Redwood counties.

MDA Noxious Weed Grant Highlights

2018 was the first year the MDA received an appropriation to award grants for the Noxious Weed and Invasive Plant Grant fund (Noxious Weed Grant). From the $300,000 appropriated for Fiscal Year 2018 (FY18), 29 counties or municipalities received awards. From the $300,000 appropriated for Fiscal Year 2019 (FY19), 35 counties or municipalities received awards. In Fiscal Year 2020 (FY20), $550,000 was allocated to the grant program, and the MDA had grants available at two levels. Level 1 grants were capped at $10,000 and Level 2 grants were awarded between $10,000 - $50,000 and intended for collaborative projects. In FY20, the MDA awarded 23 Level 1 grants and 12 Level 2 grants. In FY21, the MDA had $95,000 available for grants and awarded 20 projects. Figures 5 - 8 are based on the grants that have closed to date (2018 - 100%; 2019 - 100%; 2020* - 80%; 2021** - 70%).

**Based on final reports of closed grants as of 03/07/2022 (80%)*
***Based on final reports of closed grants as of 03/07/2022 (70%)*

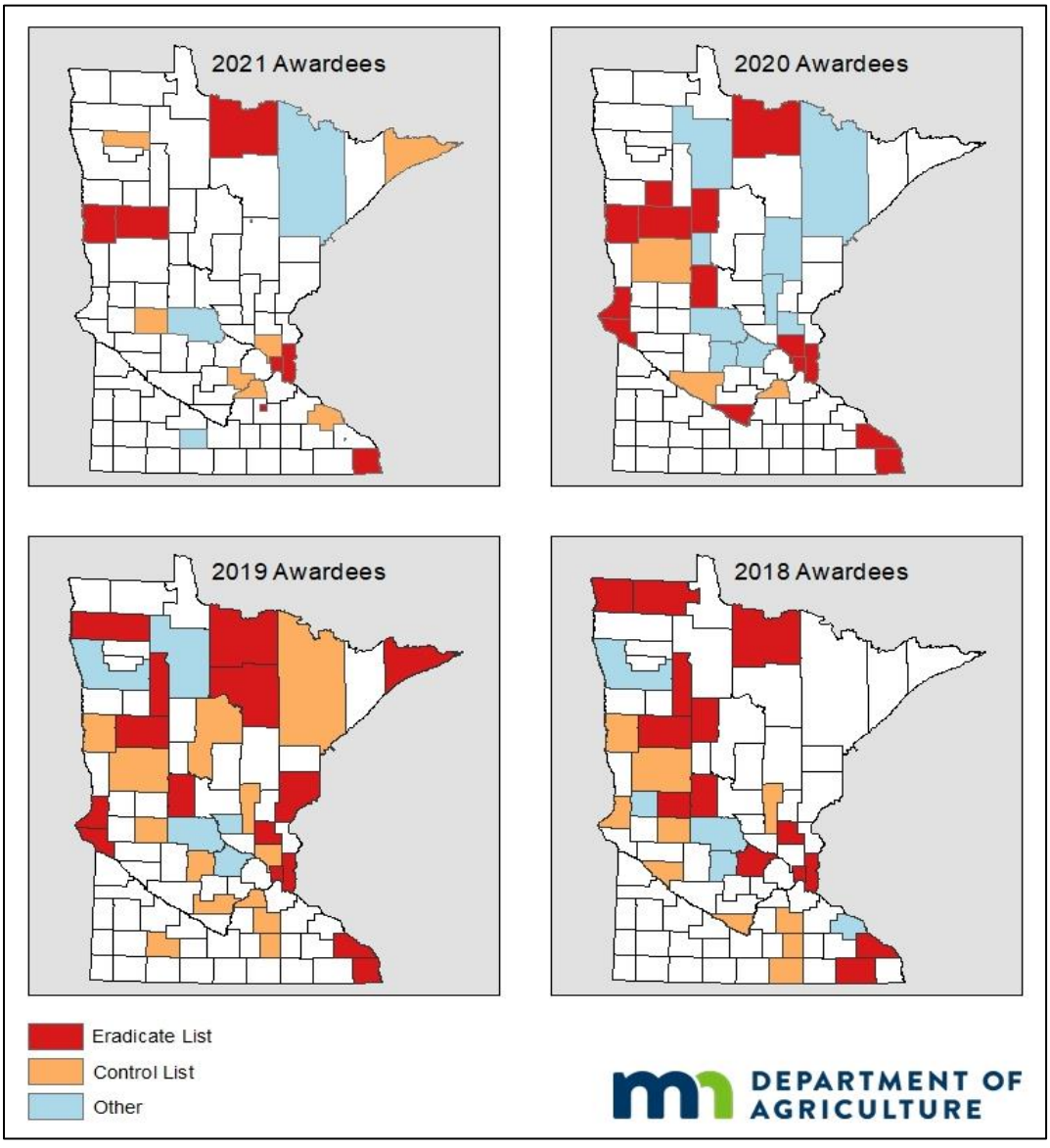

Figure 5. Noxious Weed Grant awardees 2018 – 2021.

As part of their grant closeout, grantees were asked to provide information about how many acres they surveyed, acres they treated, miles of roadsides surveyed, and miles of roadside treated using grant funds. Between 2018-2021, the MDA has awarded 120 projects totaling $1,331,000. Impacts include over 40,000 acres and roadside miles surveyed, over 20,000 acres and roadside miles treated, numerous trainings and workshops, and positive impacts with townships, counties, and landowners working on noxious weeds adjacent to grant projects.

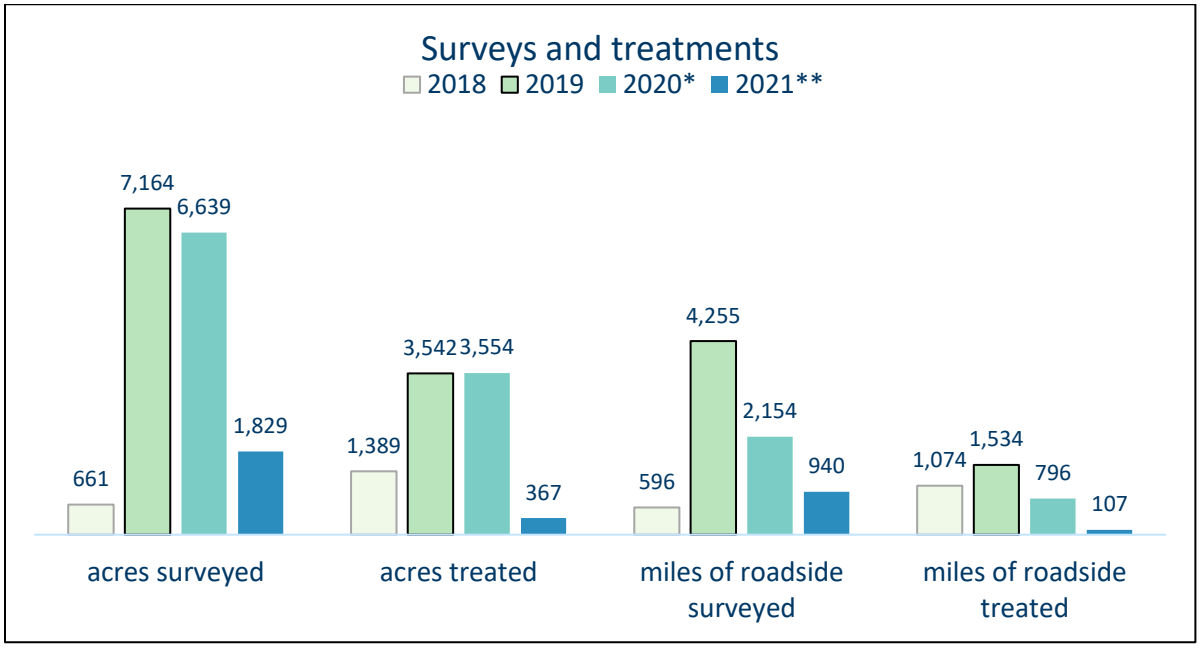

Figure 6. Surveys and treatments among grantees.

Outreach activities ranged from holding workshops or trainings, hosting meetings, printing outreach materials, and sending mailings about noxious weeds to landowners and land managers.

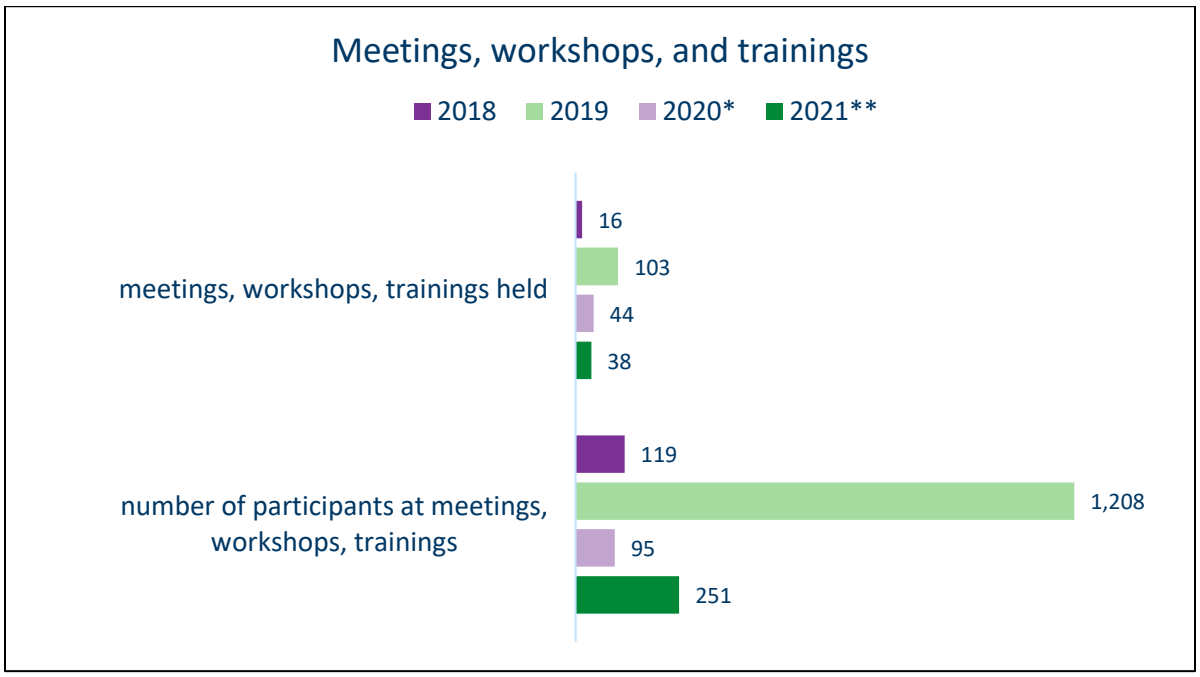

Figure 7. Grantee outreach activities.

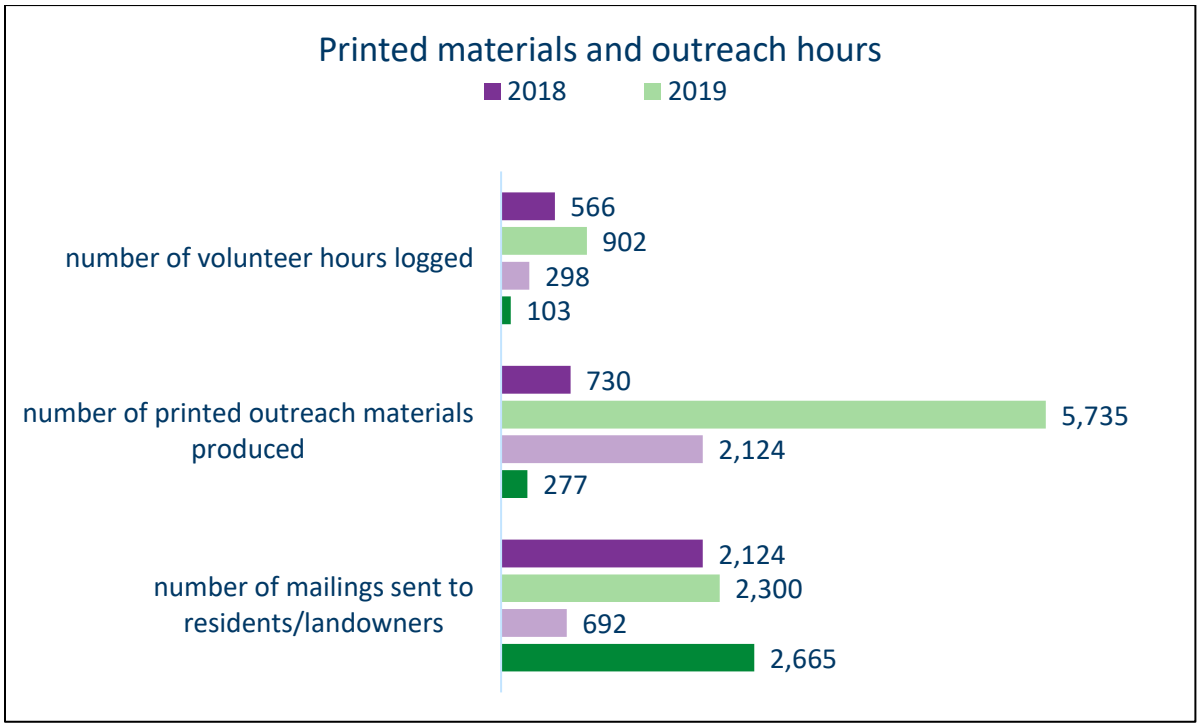

Figure 8. Volunteer hours, outreach materials produced, and mailings sent to landowners among grant recipients.

Palmer Amaranth

Palmer amaranth (Palmer) was first found in Minnesota in the fall of 2016. Since its introduction, Palmer has been documented at 31 sites in 12 counties throughout the state. Additionally, 65 sites in 13 counties were suspected of having a contaminated source of Palmer, but no plants have been found to date. The MDA, with assistance from the University of Minnesota Extension and other stakeholders, began an aggressive zero-tolerance program for Palmer amaranth beginning in 2014 by listing the species on the Prohibited Eradicate Noxious Weed list two years prior to the plant first being discovered in the state. The goal was to develop early awareness among farmers, landowners, and land mangers so that once it was discovered, immediate action could be taken. In fact, the first and subsequent findings in the state have occurred through farmers and crop consultants informed about Palmer amaranth through MDA and Extension outreach efforts.

Early on, Palmer was primarily entering the state through contaminated seed sources. As a result, the MDA implemented the use of a genetic test for seed sold in the state that significantly helped not only identify sources of contamination through the seed pathway, but also has become a great deterrent for contaminated seed and screenings making their way into the state. Since those first infestations were discovered, the MDA has learned of several other pathways of concern, including manure, feed, and forage. Spread through contaminated equipment is also a concern, and the MDA and Extension are partnering on an outreach campaign to make farmers and other agricultural industries more aware of the potential pathways of spread for this noxious weed (Figure 9). Additionally, press releases, county meetings, flyers, webpages, and other forms of information continue to be created to get the word out about Palmer amaranth.

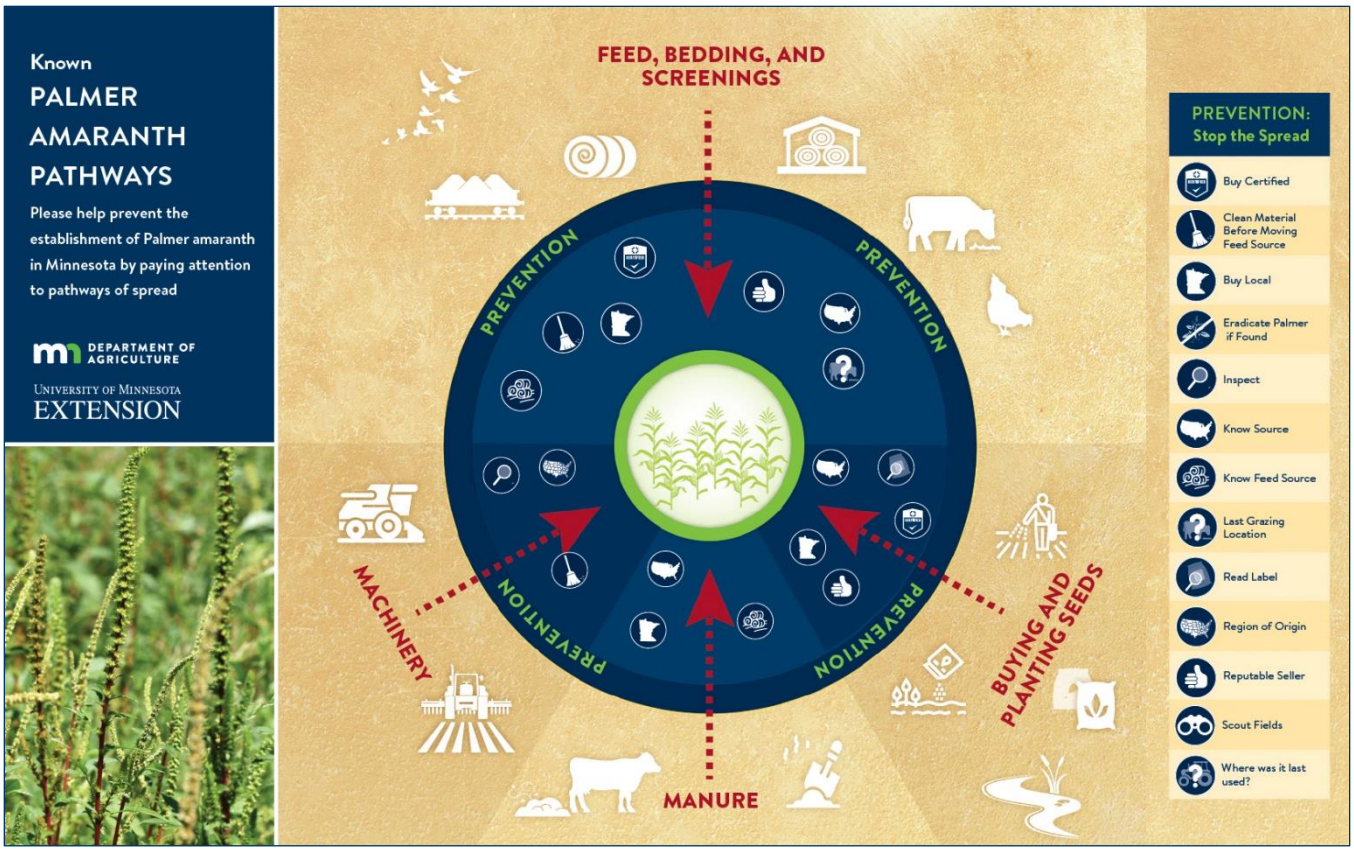

Figure 9. The Minnesota Department of Agriculture and the University of Minnesota Extension pathways outreach diagram.

When Palmer is found at a location, management plans are designed for the situation and immediately put in place to eliminate plants prior to any reproduction and seed development. Management always includes intensive survey of sites, but also includes practices such as hand pulling, flame torching, prescribed fire, and herbicide treatments. Management also requires working closely with landowners, crop consultants, Extension, and other stakeholders to achieve the highest success. To date, these efforts have shown that the MDA and partners are preventing large scale Palmer amaranth establishment in Minnesota compared with southern and neighboring states. The MDA and Extension are committed to continuing these early detection and rapid response efforts for Palmer amaranth to keep it from becoming detrimental to farmers and their crops.

For an infested location to be considered eradicated, Palmer amaranth must not be found growing for three consecutive years. To date, 16 infested sites in six counties have been considered eradicated. Fifteen infested sites in eight counties are still being managed (they have not reached three years of having no Palmer found on them). However, of these 16 sites, only a single location has had Palmer reoccur on it after initial documentation and management. This is most likely because the site had been established for several years prior to being discovered and has developed an extensive seed bank. In 2021, the MDA only found a few plants growing at the location and they were hand pulled prior to seed set. The MDA will continue its robust management plan for this site in 2022.

In 2021, Palmer amaranth was discovered for the first time in three counties. One location was in Polk County and resulted from contaminated sunflower screenings that were dumped onto an adjacent field from their processing facility where they were eventually tilled into the soil. The MDA initially discovered the location through sampling screenings material that tested positive for Palmer amaranth. After investigating the site, a

management plan was established in cooperation with the company. Palmer was also found growing in Clay and Goodhue counties. In Clay County, the plants were destroyed before seed set and the source was identified as contaminated commercial chicken feed. The feed company was notified of the issue, and they are exploring options to prevent future contamination. In Goodhue County, Palmer amaranth was found at three locations, and although two locations belong to the same landowner, they are believed to be the result of contaminated manure. The third location's source is still unknown. The MDA scouted a feedlot where one of the farmers had sourced their manure and was able to positively identify Palmer amaranth plants growing near the feed bunks of the cattle and the manure pit. All field locations in each county have had management plans developed and implemented, and the MDA will begin working with the feedlot in early 2022 to develop a site-specific plan.

Palmer amaranth detection and eradication will continue to be a top priority for the MDA Noxious and Invasive Weed Program in 2022. All sites from 2019, 2020, and 2021 will be the top priority for scouting. All sites from 2016, 2017, and 2018 are all deemed eradicated.

Check out the recent publication – Timeline of Palmer amaranth (*Amaranthus palmeri*) invasion and eradication in Minnesota.

Summary

2021 continued to bring challenges to the Noxious and Invasive Weed Program. In-person meetings and fieldwork continued to be limited, and staff were continually adjusting to changing protocol regarding COVID-19 safety. The MDA continues to support County Agricultural Inspectors and local units of government by attending virtual meetings and setting up virtual trainings.

The Noxious and Invasive Weed Program would like to thank the Minnesota Legislature, the Legislative-Citizens Commission on Minnesota Resources, the Noxious Weed Advisory Committee, County Agricultural Inspectors, Township and Municipal Weed Inspectors, landowners, and all stakeholders for continuous support of the program.

For More Information

Tony Cortilet
Noxious and Invasive Weed Program Supervisor
anthony.cortilet@state.mn.us

Monika Chandler
Weed Biological Control Coordinator
monika.chandler@state.mn.us

Emilie Justen
Noxious and Invasive Weed Grant Coordinator
emilie.justen@state.mn.us

Shane Blair
Palmer Amaranth Eradication Specialist
shane.blair@state.mn.us