DEPARTMENT OF AGRICULTURE

Noxious and Invasive Weed Program

2023 Annual Report

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Contents

Noxious Weed Law

The Noxious Weed Law protects Minnesota residents from the injurious effects of noxious weeds on public health, the environment, public roads, crops, livestock, and other property.

New County Finds of Eradicate Species

In 2023, two Prohibited Eradicate species were confirmed for the first time in two counties. Palmer amaranth is a high-profile noxious weed of row crops. Red hailstone is an herbaceous perennial vine with heart-shaped leaves, tendrils, and showy yellow flowers; the vines have underground tubers that make it a challenge to manage.

Table 1. 2023 New county detections of Noxious Weeds.

Species	County
Palmer amaranth (*Amarannthus palmeri*)	Wadena
Red hailstone (*Thladiantha dubia*)	Fillmore

The number of new county finds of Prohibited Eradicate noxious weeds has decreased since 2019. Several species (meadow knapweed, poison hemlock, and round leaf bittersweet) were moved from the Prohibited Eradicate category to the Prohibited Control category in 2023; in prior years, those species were found in new counties multiple times. After years of surveying and mapping these species, they were too widespread to be considered for the Prohibited Eradicate category.

Program Operations

Data Reporting

The Noxious Weed Program collects data on various aspects, such as acres treated, Report a Pest inquiries, and management activities. The data is used to determine trends and in legislative reports. In 2023, the Noxious Weed Program:

- Trained 13 new County Ag Inspectors (CAI) on the Noxious Weed Law, weed law enforcement, Seed Law, and CAI duties.
- Conducted seven terrestrial plant risk assessments with the Noxious Weed Advisory Committee (NWAC).
- Confirmed 20 reports of Prohibited Eradicate species.
- Responded to 119 Report a Pest inquiries, resulting in five positive identifications of noxious weeds.

Outreach

- The MDA Noxious Weed Program staff provided over 20 trainings and presentations on plant identification and weed management and trained over 200 people.
- The Weed of the Month series continues to have a tremendous reach, with over 17,000 subscribers. The articles are also reprinted in local newspapers, broadcast on farm network radio shows, and sent to hundreds of master gardener volunteers.
- An advertising campaign for Palmer amaranth was launched in 2023. The goal of the campaign was to raise awareness about the species to landowners and farmers. Digital ads were put on Facebook and

Google. The digital ads received over 2.9 million views, with a high click-through rate, and the campaign was deemed successful.

Weed Biocontrol

Leafy Spurge

There were no collections and releases of leafy spurge beetles (*Aphthona* spp) in 2023. Sites were monitored but collectible populations were not found.

St. John's Wort

While monitoring leafy spurge biocontrol at Trout Brook Nature Sanctuary in Ramsey County, beetles were found defoliating common St. John's wort (*Hypericum perforatum*) on June 14, 2023. On June 26, 2023, some beetles on the St. John's wort were collected and sent to the United States Department of Agriculture (USDA) for identification. They were identified as greater St. John's wort beetles (*Chrysolina quadrigemina*). The MDA is not aware of any releases of this species in the region. There was a similar find of *C. quadrigemina* on St. John's wort at a site in Washington County in 2022.

Figure 1. *Chrysolina quadrigemina* beetles feeding on common St. John's wort.

Figure 2. Common St. John's wort plants were skeletonized from foliar feeding.

Purple Loosestrife

To address concerns about loosestrife management on private property at a location in St. Louis County, the MDA collected approximately 700 loosestrife beetles (*Galerucella* spp.) on June, 7 2023 and shipped them to the county to release on June, 8 2023.

Figure 3. Loosestrife beetle on purple loosestrife.

Spotted Knapweed

A former gravel pit site near Bemidji was monitored for spotted knapweed biological control agents on June 18, 2023. Many root weevils (*Cyphocleonus achates*) were released at this location over multiple years with the hope that it will be a collection site. Although root weevils were observed, the population had not built to collectible levels yet. Sites were monitored at General Andrews Nursery on August 2, 2023 with the Minnesota Department of Natural Resources (DNR) Forestry and Three Rivers Parks collaborators. No collectible populations were found.

The MDA requested and received 1,000 root weevils from Montana through a United States Department of Agriculture, Animal and Plant Health Inspection Service, Plant Protection and Quarantine (USDA APHIS PPQ) program to support state weed biocontrol efforts. These weevils were released on August 3 and 4, 2023 at 10 sites in Anoka, Beltrami, Hennepin, and Lake counties.

A field workshop was held on August 29, 2023 with nine participants from multiple counties at the previously mentioned former gravel pit site near Bemidji. Participants learned how to find and collect root weevils and see biocontrol impacts.

MDA Noxious Weed Grant

2023 Recipients

In Fiscal Year 2023 (FY23), $38,700 was available for the noxious weed grants and the MDA awarded seven projects: three Soil and Water Conservation Districts, and four counties.

Table 2. 2023 MDA Noxious Weed Grant recipients.

Organization	County	Award	Project Title
Aitkin SWCD	Aitkin	$2,000	Noxious Weed and Invasive Species Outreach Infographics
Anoka Conservation District	Anoka	$15,000	Andover Rum River
Dodge County	Dodge	$5,000	Dodge County Ag Inspector Equipment Grant
Scott SWCD	Scott	$7,000	Scott CWMA – Pilot Township Spray Program
Sibley County	Sibley	$700	Noxious Weed Control
Stearns County	Stearns	$3,500	Stearns County 2023
Waseca County	Waseca	$5,000	Noxious Weed Maintenance Along Public Drainage Systems

Cumulative Data

Since 2018, the MDA has received appropriations to award grants for the Noxious Weed and Invasive Plant Grant fund. Between FY18 and FY23, the MDA awarded $1,407,488 to 154 projects to municipalities and tribes for noxious weed work. Recipients have used grant funds to:

- Survey over 26,000 acres and roadside miles to document locations of noxious weeds.
- Treat over 14,000 acres and roadside miles infested with noxious weeds.
- Hold over 390 trainings/workshops focused on noxious weed identification, management strategies, and noxious weed law enforcement protocol with 2,042 participants.
- Purchase equipment and supplies, such as herbicide sprayers, herbicide, tools, mowers, and other equipment used for noxious weed management.

Table 3. MDA Noxious Weed Grant applications and awards.

Fiscal Year	Total Applications	Total Projects Awarded	Total Request	Total Funds Available and Awarded
2018	41	29	$791,540	$295,500
2019	35	35	$481,512	$321,325
2020	45	35	$868,877	$537,277
2021	44	20	$182,092	$95,100
2022	33	28	$142,868	$119,586
2023	31	7	$179,407	$38,700
Totals	**229**	**154**	**$2,646,296**	**$1,407,488**

Qualitative benefits are achieved through providing funding to local units of government and tribes as well. Grant recipients reported a multitude of benefits from grant funds:

- Reductions of weed infestations.
- Increased coordination between municipalities and private landowners who become motivated to treat infestations on their own lands.
- Facilitated connections and provided resources to help landowners who need assistance.
- Breadth of grant allows flexibility to address changes as they come up.
- Dollar amount allowed continuity in treating sites.
- Continuity in funding for consecutive years was critical for developing relationships with landowners and reducing populations of infestations.
- Provided resources to educate public and private landowners on managing noxious weeds.
- Motivated landowners that were excited to keep working on weed management.
- Increased engagement from community volunteers for noxious weed management.
- Developed strong partnerships with groups outside their districts.
- Purchased and distributed Minnesota Department of Transportation (MnDOT) noxious weed books for project partners, which were well received.
- Formed a cooperative invasive species management area which was then able to purchase supplies to continue projects.
- Developed locally relevant outreach materials.
- Communities came together to solve weed problems, working to protect our urban landscapes, farmlands, and natural resources.

Testimonials

Through these grants, the MDA has seen many positive impacts not only with reductions of weed infestations, but also increased coordination between municipalities and private landowners who become motivated to treat infestations on their own lands.

One group that came together to focus on mitigating wild parsnip infestations is the Cannon Valley Noxious Weed Group (CVNWG). The CVNWG encompasses four townships in Rice and Dakota counties: Bridgewater (Rice), Northfield (Rice), Greenvale (Dakota), and Waterford (Dakota). The group focused on treating wild parsnip and found that treatments alone would not be the most effective approach to ridding these townships of wild parsnip. The group took a new approach and focused more on outreach and education, starting with county and state highway departments. The group met with Rice County staff and MnDOT roadside staff to educate and encourage cooperation. The result was improved wild parsnip management along roadsides.

Private landowner engagement has also been a key component to grant recipients' success with managing noxious weeds. Grant recipients who work with private landowners face a different set of challenges than recipients who focus on roadsides or public lands. Landowners may not be aware that a noxious weed is growing on their property, and many lack the technical knowledge, tools, or physical ability to treat or manage noxious weeds. These grants facilitate connections and provide resources to help landowners who need assistance. Additionally, the grant funding enabled grantees to make sure outreach and knowledge for technical expertise reached underserved neighborhoods. Private landowner engagement has also led to landowners learning to manage noxious weeds on their private property without assistance from municipalities.

The grants also enabled collaboration with public landowners. Groups developed strong partnerships outside of their districts and were able to map and treat noxious weeds throughout the state. Grant recipients have worked on collaborative projects with other counties or municipalities, numerous private landowners, and have developed locally relevant outreach materials. The impacts of the Noxious Weed and Invasive Plant Grant go beyond the number of acres or roadside miles treated. Communities come together to solve weed problems, working to protect our urban landscapes, farmlands, and natural resources.

Great Lakes Restoration Initiative Project

Local partners have been instrumental in moving this project along. Partners, with MDA oversight, have worked on wild parsnip management at multiple locations in three counties. In the fall, the project focused on knotweed and woody invasive management, primarily isolated populations of common buckthorn. Revisiting and updating outdated EDDMapS records was another task where progress has been made through project funds. The updated record information helps with prioritizing 2024 control work.

Palmer Amaranth

Palmer amaranth (Palmer, *Amaranthus palmeri*) was first found in Minnesota in the fall of 2016. Since its introduction, Palmer has been documented at 94 sites in 15 counties throughout the state. The MDA, with assistance from the University of Minnesota Extension (UME) and other stakeholders, began an aggressive zero-tolerance program for Palmer 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 managers 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 through the MDA and UME outreach efforts.

Table 4. Palmer amaranth presence and reoccurrence by calendar year.

Calendar Year	Sites with Palmer present for the first time	Sites with Palmer recurring
2015	N/A	N/A
2016	15	0
2017	6	2
2018	2	0
2019	3	0
2020	3	1
2021	6	2
2022	3	4
2023	2	1

In 2023, Palmer was confirmed at two new sites in the state. The MDA is also working with a landowner to control a single location confirmed in 2020 that continues to produce new plants in the same isolated location.

Table 5. Number of locations where Palmer was suspected or introduced, confirmed locations, and the confirmation percentage by calendar year.

Calendar Year	Sites with Palmer introduced or suspected	Sites with Palmer confirmed	Percentage of sites investigated where Palmer was confirmed
2015	N/A	N/A	N/A
2016	31	15	48 %
2017	53	21	40 %
2018	70	23	33 %
2019	73	26	36 %
2020	76	29	38 %
2021	88	35	40 %
2022	92	38	41 %
2023	94	40	43 %

Since 2016, the number of sites with Palmer either introduced or suspected of being introduced has been recorded. The numbers represent cumulative sites over time. Cumulatively, there have been 94 total sites suspected to have Palmer, and of those 94 sites investigated, less than 50% of the sites have had confirmed Palmer infestations.

Table 6. Number of acres where Palmer is estimated, being managed or monitored, and the percentage of acres Palmer was confirmed by calendar year.

Calendar Year	Estimated acres affected	Acres being managed or monitored	Percentage of acres where Palmer was found compared with all suspected locations reported
2015	N/A	N/A	N/A
2016	114	204	56 %
2017	269	512	53 %
2018	183	2,479	7 %
2019	43	2,521	2 %
2020	103	2,490	4 %
2021	112	534	21 %
2022	102	560	18 %
2023	151	345	44 %

Estimated acres affected are the total number of acres that Palmer has been found for each calendar year. These acres are not cumulative from year to year. In general, the actual area occupied by Palmer on a site is smaller than the total acres reported. Because sites are generally subjected to the same seeding and land

management practices, the total site acres are monitored, measured, and reported. The MDA monitors the entire site to ensure Palmer does not germinate in a previously undetected area. In 2023, 345 acres were managed or monitored, and of those managed or monitored acres, 151 acres had Palmer growing. This resulted in 44% of the managed or monitored acres being confirmed to have Palmer. The data shows the disparity in size of acres per site and the amount of Palmer, if found, varies greatly.

Table 7. Number of Palmer locations being monitored, new introductions, and confirmations by calendar year.

Calendar Year	Total sites being monitored	Number of new site locations introduced	Number of sites with Palmer confirmed including new and recurring
2015	N/A	N/A	N/A
2016	31	31	15
2017	53	22	8
2018	71	17	2
2019	73	3	3
2020	46	3	4
2021	27	12	8
2022	23	4	7
2023	15	2	3

Since Palmer was first confirmed in Minnesota in 2016, the number of current sites being monitored are half the original infestations in 2016. New locations with confirmed Palmer have decreased in frequency since 2016 with only two locations confirmed in 2023. In response to the statewide advertising campaign launched in 2022, and the outreach, cooperator trainings, and research conducted by the MDA and the University of Minnesota, farmers and landowners are paying greater attention to weeds. They are also implementing best practices to prevent unwanted spread of weed seeds through a variety of identified pathways that Palmer has been documented to move through. This is helping to slow the spread of Palmer into and within Minnesota.

For the MDA to consider an infested location to be eradicated, Palmer must not be found growing for three consecutive years. To date, 15 infested sites in 10 counties have been considered eradicated. Twelve sites within seven counties are still being managed. Currently three infested sites in three counties are being intensively managed because Palmer was found last year (two sites) or continues to reappear (one site). The MDA will continue its robust management plan for these three sites in 2023.

Up and Coming Plant Invaders

In addition to listed noxious weeds, the MDA Noxious and Invasive Weed program and its partners investigate new finds of potentially new invasive plants that are not known to be in Minnesota but have been reported to be invasive in other regions. By quickly following-up on reports of new potential invasive plants, the MDA can quickly report new species finds and to alert landowners of the potential damage that these plants may cause if left untreated. Through quick action, the MDA has seen isolated populations of new invaders be quickly

eradicated lessening the threat to the state. This quick reaction also educates landowners to take steps to prevent movement of these species into Minnesota and to keep a watchful eye out in case they reappear in the future.

Yellow Loosestrife

A small population of a *Lysimachia* was reported at Oakdale Nature Preserve by an Oakdale Parks and Recreation employee. Samples were collected on June 22, 2023. A DNR botanist identified the plants as large yellow loosestrife (*Lysimachia punctata*). Oakdale Parks and Recreation controlled the population.

Figure 4. A city employee noticed and reported a small population of *Lysimachia*.

Figure 5. *Lysimachia punctata* flowers are yellow with a reddish center.

Unidentified Buckthorns

New populations of unidentified buckthorn (*Rhamnus* spp.) were reported in 2023 at Duck Lake in Mankato by DNR Forestry and at Gloster Park in Maplewood by Maplewood Parks and Recreation. Samples were collected on June 28, 2023 in Mankato and on October 5, 2023 in Maplewood. They were recognizable as *Rhamnus*, but were not common buckthorn (*R. cathartica*) which is abundant in Minnesota. The plants have not been identified to species and may be hybrids. To better understand the issue, a multi-agency team of people who work with invasive plants toured the Maplewood infestation on November 3, 2023.

Figure 6. The *Rhamnus* plant in Mankato had bronze bark and long, sharp thorns.

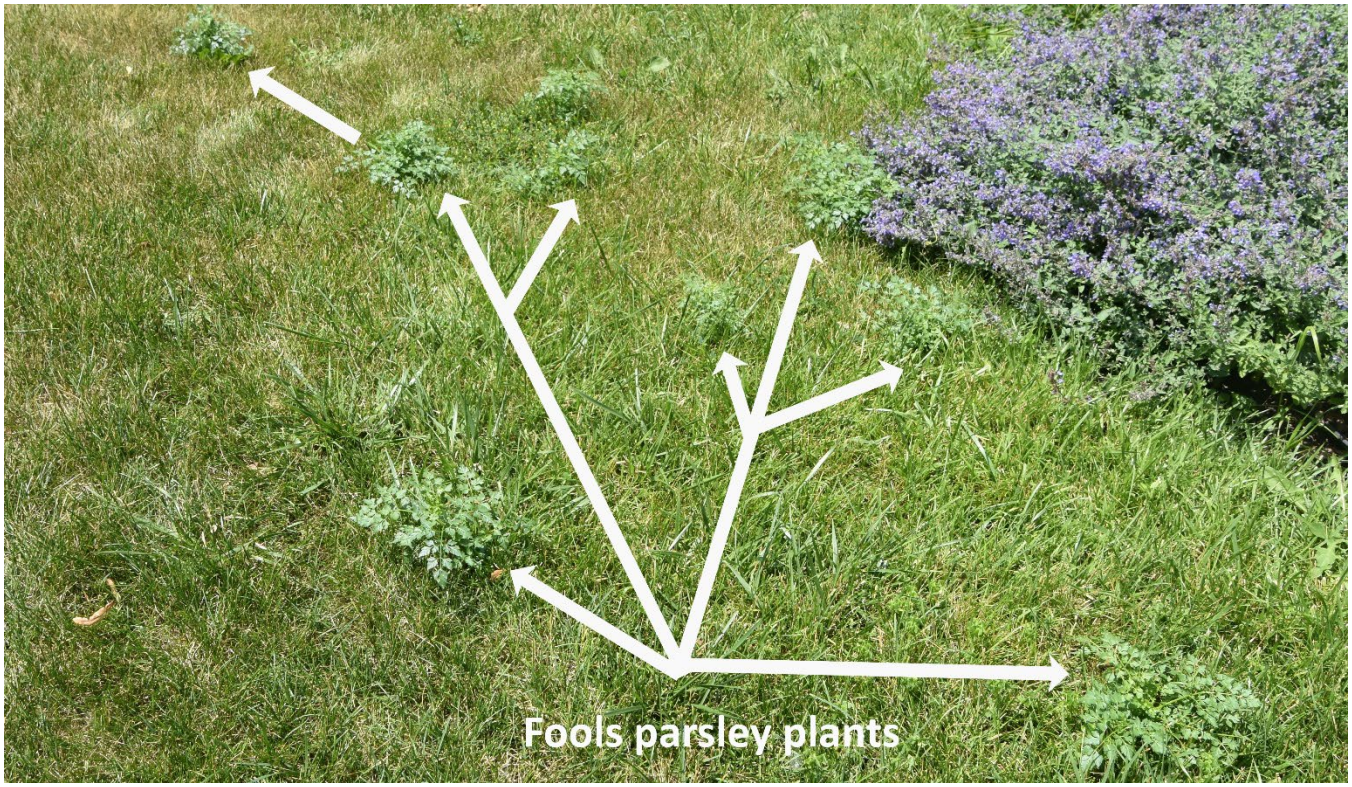
Figure 7. Maroon colored petioles are different than the greenish yellow of common buckthorn.

Fool’s Parsley

There was a report of an unidentified plant in the carrot family. It turned out to be Fool’s parsley (*Aethusa cynapium*). It was a surprising find because except for a recent find at the Minnesota Landscape Arboretum, it had not been found in Minnesota since an 1878 find in Lake City. Samples were collected on June 29, 2023 in Maple Grove and will be accessioned into the Bell Herbarium.

Figure 8. Fool's parsley looks similar to parsley but the long bracts below the flowerhead are distinctive.

Figure 9. Fool's parsley rosettes growing in a lawn.



Woodland Bittercress

A bittercress was reported as woodland bittercress (*Cardamine flexuosa*) at Arden Park in Edina. Samples were collected on November 21, 2023 and will be accessioned into the Bell Herbarium after an identification is finalized. The preliminary identification is woodland bittercress. This plant has been recorded at only three other locations in Minnesota: Plymouth, Minneapolis, and Duluth.

Figure 10. Rosette of a likely woodland bittercress plant.

Figure 11. Flowers of likely woodland bittercress.

Dying Buckthorn

Stands of dead and dying common buckthorn (*Rhamnus cathartica*) have been observed at a few locations within approximately 50 miles of St. Cloud. University of Minnesota researchers have a project Biological control of buckthorn using fungi. They collected samples at locations with dying buckthorn and are trying to identify the causal organism/s. The MDA has been connecting researchers to reports of dying buckthorn and made a couple of site visits with them on July 12, 2023.

Figure 12. The darkened cambium layer right below the bark indicates disease.

Figure 13. The buckthorn sapling in the foreground is dead and has bark peeling off and there is decomposing fungi on the bark.

For More Information

To learn more about noxious weeds in Minnesota:

- Visit our website
- Email noxiousweeds.mda@state.mn.us
- Reach out to a Noxious Weed Advisory Committee member
- To report noxious weeds, visit Report a Pest or EDDMapS