

BWSR Invasive Species Plan

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Minnesota Board of Water and Soil Resources

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Why Invasive Species Management Matters

The Minnesota Board of Water and Soil Resources (BWSR) is focused on targeted conservation of private lands that make up approximately 75% of Minnesota's landscape. BWSR programs and the efforts of BWSR partners that provide **wetland protection, conservation easements** (resource protection and restoration), and **soil and water conservation grants** focus on the protection and establishment of diverse native plant communities to meet program and project goals. Invasive species (including plants, animals, insects, and pathogens) pose a significant risk to the integrity of plant communities that conservation professionals work to protect and restore by displacing native species and changing plant community structure and function. Invasive species also cause harm to other aspects of the environment, such as impeding the flow of water in the case of non-native phragmites, or killing large numbers of trees in the case of emerald ash borer. They can also cause economic harm to industries such as agriculture, forestry, grazing, and fisheries.

The following is a list of risks posed by invasive species:

- Infestations of invasive species (such as Common Buckthorn) can limit land use.
- Invasive species can impact outdoor recreation such as hunting, fishing, camping, hiking, boating, and other outdoor recreational activities.
- It is estimated that invasive species cause \$120 billion per year in economic losses in the United States, including direct costs to economic sectors as well as direct costs related to control.
- Introduction of invasive species ranks second only to habitat loss from development and related activities as an impact to biological diversity.
- Invasive species such as cheat grass alter ecosystems by increasing fire frequency of some plant communities.
- Invasive species can impact human health: wild parsnip causes burns and rashes and infestations of Japanese barberry harbor large populations of ticks that can spread Lyme disease.

Invasive species factor into BWSR programs, policies and practices as part of program guidance, site selection considerations, restoration practices and long-term management of projects. Invasive plants can have a significant impact on BWSR programs and individual projects, so many of BWSR's landscape management efforts are focused on these species. BWSR uses the Minnesota DNR "Plant Checklist" ([Excel](#) or [pdf](#)) for considerations about invasive plant species for programs. This list also designates which plant species are Minnesota designated Noxious Weeds.

Minnesota's Approach to Invasive Species Management

Minnesota has a strong legacy of effective collaboration to accomplish conservation goals. This legacy also applies to the management of invasive species in the state with a wide range of partners playing key roles. These partners include elected officials, agencies, non-profit organizations, universities, local governments, private industry and landowners. The following diagram shows the different aspects of invasive plant control and groups that play key roles.

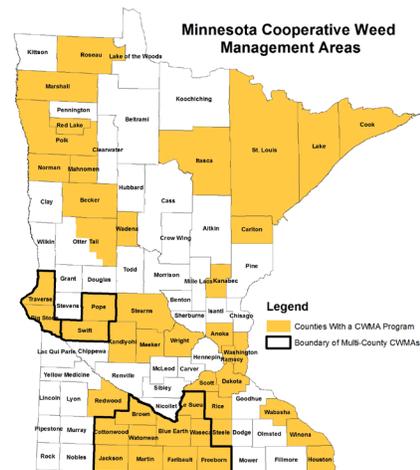


BWSR's Work to Date

Since its beginning in 1987 the Minnesota Board of Water and Soil Resources has played a key role in protecting and restoring native plant communities and working to control invasive species. Key aspects of BWSR's programs involve protecting and restoring wetlands and other important natural resources, retiring and restoring marginal agricultural land to native vegetation, soil and water conservation projects, and the planting of native vegetation to provide multiple landscape benefits. Nearly 300,000 acres have been protected/restored through the programs listed below.

Key Programs

Cooperative Weed Management Areas (CWMA)s – BWSR's CWMA Program began in 2008 and is focused on establishing partnerships across the state that collaborate on invasive species management across ownership boundaries. The program now covers 43 counties. Cooperative weed management areas originated in western states to manage weeds in grazing areas and have become a key strategy in Midwestern states for mapping, planning, management, outreach and monitoring.



Minnesota Wetland Conservation Act Coordination – The Minnesota Wetland Conservation Act has been in place since 1991 and has significantly reduced the loss of wetland acres. Many of these wetlands are in important habitat corridors that are a focus of restoration and invasive species control. As part of wetland protection efforts, approximately 16,000 acres of mitigation wetlands have also been restored, often involving invasive species control efforts in addition to the planting of native vegetation.

Conservation Easements – BWSR's RIM program has protected approximately 20,000 acres of high quality natural landscapes including native prairies, shallow lakes and diverse wetlands and restored approximately 230,000 acres of marginal farm land (or prevented CRP conversion to agriculture) over the last 28 years with a focus on key habitat complexes and corridors. This program also has a focus on replacing non-native vegetation with native species and the management of invasive species. A new Conservation Reserve Enhancement Program (CREP) partnership with NRCS, FSA and SWCDs is focused on restoring 60,000 acres over five years.

Conservation Cost-share – Approximately 24,000 acres of grassland and 6,500 acres of trees and shrubs have been planted through soil and water conservation grants. These projects also have a focus on establishing native plant species and prohibit the planting of invasive species.

Policy and Guidance

Vegetation Policies: BWSR has policies in place requiring the use of diverse native vegetation for projects to provide a variety of landscape functions (carbon sequestration, soil microbial health, stormwater infiltration, pollinators, etc.). The BWSR [Native Vegetation Establishment and Enhancement Guidelines](#) were developed to assist resource professionals and landowners in making informed decisions about the planting and maintenance of state funded restoration and conservation projects. The guidelines assist with plant selection and source considerations for seed and plant material across the state of Minnesota. Goals of the guidelines are to create consistency among state programs; to avoid the use of invasive species; protect remnant plant communities, and to ensure that plantings function at a high level and meet project goals. The guidelines are updated periodically as new research and field experience becomes available.

Technical Guidance Sheets: [Technical guidance sheets](#) have been developed by BWSR focusing on strategies for effective site preparation, planting and management of projects. These practices often have a focus on invasive species removal.

Plant ID Guide: The BWSR [Wetland Restoration Plant ID Guide](#) has a focus on native species that are common in restoration projects as well as invasive species that are common.

Invasive Species Management Information: An appendix of the [Minnesota Wetland Restoration Guide](#) is focused on invasive species management for species that are problematic for restoration projects.

What's Working Information: BWSR's "[What's Working](#)" webpage also summarized effective methods of restoring diverse plantings and is starting to build more information about invasive species management. This information is collected from practitioners and documents what has been successful for projects.

Training: BWSR uses a variety of outreach strategies to reach a broad audience with different learning styles to promote and guide the establishment and management of plant communities. Five to ten native vegetation/plant ID workshops are presented each year covering the topics of functional benefits of native vegetation (including pollinator habitat), vegetation management, and plant identification. The BWSR Academy is also held each year and includes topics on native vegetation establishment and management.

Native Seed Mixes: In partnership with Mn/DOT and DNR, BWSR has developed twenty-seven [state native seed mixes](#) and around forty other "pilot" mixes have been developed that focus on accomplishing a variety of ecological functions while also providing pollinator habitat. These mixes are used by federal, state and local agencies as well as consultants, non-profits and private landowners. The mixes are purchased from private seed vendors around the state. The BWSR Native Vegetation Establishment and Enhancement Guidelines provide new guidance about the use of existing state seed mixes.



Sweet clover invading a restored prairie

Minnesota Tactical Invasive Species Plan: The Minnesota Department of Agriculture is leading the development of a tactical invasive species plan for terrestrial plant species that will investigate economic costs of species and provide guidance about how species controls should be prioritized across the state. This information will provide valuable guidance for Cooperative Weed Management Areas.

Interagency Coordination

BWSR is working with other agencies through the Minnesota Noxious Weed Advisory Committee and the Minnesota Invasive Species Advisory Council. The control of palmer amaranth has become a significant threat to agricultural production in the state and has led to a strong partnership between state agencies, conservation professionals and seed vendors. This work has also resulted in new outreach on effective methods of preventing further introduction of the species (see appendix A).



Invasive tree removal in a prairie

BWSR also works closely with a wide range of conservation partners to accomplish agency and program goals. Federal agencies such as the Natural Resource Conservation Service (NRCS), Farm Services Agency (FSA), U.S. Fish and Wildlife Service, and U.S. Army Corps of Engineers are all key partners. BWSR relies on a local delivery model where local government organizations such as soil and water conservation districts, watershed districts, cities and counties work directly with landowners and coordinate with BWSR for funding and technical resource needs. BWSR also partners with a wide range of non-profit organizations as well as universities and colleges to address invasive species issues.

Grant/Information Links

Cooperative Weed Management Area Program

<http://www.bwsr.state.mn.us/grants/cwma/CWMA.html>

Wetland Protection (Administration of the Minnesota Wetland Conservation Act)

<https://bwsr.state.mn.us/wetlands-regulation-minnesota>

Conservation Easements (Reinvest in Minnesota): <https://bwsr.state.mn.us/what-are-conservation-easements;>

<http://www.bwsr.state.mn.us/reinvest-minnesota-overview>

Soil and Water Conservation Grants: https://bwsr.state.mn.us/cwf_programs;

<https://bwsr.state.mn.us/swcd-grants>

<http://www.bwsr.state.mn.us/cs/index.html>; <http://www.bwsr.state.mn.us/cs/index.html>;

<http://www.bwsr.state.mn.us/cs/index.html>

BWSR Action Steps for Invasive Species Management



Wild Parsnip in a wet meadow

1) Update goals and planning for BWSR's Cooperative Weed Management Area Program.

- BWSR's Cooperative Weed Management Area Program has been in existence since 2009 and has resulted in the establishment of 25 weed management organizations in the state covering around 35 counties. Program goals and future direction of the program to maximize outcomes were assessed during the winter of 2019 by the CWMA Interagency Advisory Team, which includes members from BWSR, MDA, DNR, MnDOT and The Nature Conservancy. There will be an effort to collect information about what has been successful for these groups and to help meet the information and coordination needs of these groups.

2) Address the threat from Palmer Amaranth and other noxious weeds to agricultural production.

- BWSR and the Minnesota Department Agriculture has been focused on the prevention of Palmer Amaranth in Minnesota. Newly developed outreach that defines partner roles is being communicated to conservation partners and seed vendors. The Minnesota Department of Agriculture held a Palmer Amaranth summit in 2019 to initiate communication.

3) Protect the integrity of native plant communities through habitat protection and restoration.

- BWSR easement programs and coordination of the Wetland Conservation Act work to achieve protection and restoration of important natural resources in Minnesota. These programs will continue protecting important resources.
- Guidance will be updated in the [Minnesota Wetland Restoration Guide](#), BWSR's [What's Working](#) webpage, and other technical resources about key restoration strategies for native plant communities and invasive species control methods.
- State wetland seed mixes are under revision to maximize landscape benefits of restoration.

4) Continue refining invasive species management policies and practices related to conservation easement and other restoration projects.

- The [Reinvest in Minnesota \(RIM\) program](#) is focused on the acquisition, restoration and enhancement of sensitive land and critical habitat and currently includes about 280,000 acres of easements. Through the CREP program partnership, an additional 60,000 acres will be restored through 2021, with a focus on restoring prairie and wetlands on marginal agricultural lands. Diverse seed mixes are being used in keeping with BWSR's vegetation policy, including a high percentage of milkweeds for pollinators. Program policies will continue being updated related to the management of invasive species. BWSR's "Landowner's Guide to BWSR's Conservation Easements", focusing on the stewardship of projects, will be updated based on feedback from partners.
- Habitat protection and restoration will be focused on habitat complexes and corridors such as the Prairie Core Areas identified in the [Minnesota Prairie Conservation Plan](#), which play a key role in the overall resiliency of landscapes and help to minimize pressure from invasive species, since the ratio of edge to core area is lower than in many other landscapes.



Wild Parsnip seedhead

5) Further incorporate invasive species management into working lands and agricultural conservation practices and farmsteads.

- Incorporate native vegetation into agricultural conservation practices, such as prairie and wetland restoration, windbreaks/shelterbelts, contour buffer strips, filter strips, riparian buffers, and critical area plantings. The approximately 72,000 acres of grassland and 39,500 acres of trees and shrubs that have been planted via soil and water conservation grants provide important landscape benefits.
- Provide guidance in BWSR's [Buffer Establishment and Management Toolbox](#) on ways to incorporate native vegetation into buffer plantings and manage invasive species.
- Promote conservation tillage, perennial vegetation and cover crops (with a focus on flowering species) in agricultural areas to improve soils, water quality and overall landscape resiliency. BWSR's [Working Lands Watershed Restoration Feasibility Study and Program Plan](#) summarizes a variety of alternative planting options and BWSR's vegetation guidance for projects is being adjusted to be complementary to this report.

6) Further incorporate invasive species management into urban water quality projects.

- Continue refining and providing outreach on ways to incorporate invasive species management into urban water quality projects, such as raingardens, bioretention areas, stormwater ponds and impoundments. Conduct outreach through program policies and guidance, publications, and by sharing information at workshops, and BWSR's [What's Working](#) web pages.

- Continue collaboration with Metro Blooms and the Blue Thumb Partnership on a guide to the management of stormwater projects including invasive species identification and management.

7) Refine outreach and technical resources for invasive species management and landscape stewardship.

- BWSR’s [Native Vegetation Establishment and Enhancement Guidelines](#) were updated in 2019 to assist resource professionals and landowners in making informed decisions about the planting and maintenance of state funded restoration and water quality projects. Goals of the guidelines are: to create consistency among state programs; to avoid the use of invasive species; and to ensure that plantings function at a high level and meet project goals. Updated information about palmer amaranth/noxious weed prevention methods were added.



Establishing native vegetation for imperiled bees and butterflies is a goal for many projects

- Continue refining outreach documents, including BWSR’s, [Minnesota Wetland Restoration Guide](#), [Guidelines for Inter-seeding to Restore or Enhance Native Species Diversity](#), [What’s Working](#) webpage, and other habitat guidance.
- Through collaboration with conservation partners, test BWSR’s [new pilot state seed mixes](#) developed to incorporate habitat into a wide range of project types (buffers, impoundments, wetlands, stormwater ponds, bioenergy plantings, landfills, mine reclamation, etc.). These mixes have been developed in addition to the existing set of twenty-seven state seed mixes that were developed by BWSR, MnDOT and DNR for prairie, wetland and woodland restoration. These mixes are used by federal, state and local agencies as well as consultants, non-profits and private landowners.

- Conduct outreach on [Maintaining Roadside Plant Diversity](#), using information developed by BWSR and Xerces Society.

8) Provide technical assistance and coordinate with partner agencies and researchers.

- Collaborate with a wide range of partners including the Minnesota Terrestrial Plants and Pests Center and the Minnesota Aquatic Invasive Species Research Center on grants to manage invasive species and maintain the overall integrity of landscapes. Study how to be most effective with site



Invasive Plumeless Thistle

selection, project design, and management to sustain diversity and the integrity of native plant communities.

9) Strive for program and project improvement to maximize invasive species management

- Partner on the state's [Restoration Evaluation Program](#) to assess the success of restoration efforts and identify trends and opportunities for improvements for program planning and project implementation.
- Update BWSR's [What's Working](#) webpage yearly to document successful conservation practices and restoration strategies involving invasive species management.

Appendix A: Prevention of Palmer Amaranth and other Noxious Weeds in Conservation Projects

Guidance for Project Managers and Vendors

The introduction of *Palmer Amaranth* and other noxious weeds through seed and seed mixes is a major concern in Minnesota. It is important that [Minnesota and federal seed laws](#) are followed for all projects and that other steps are taken to prevent introduction of noxious weeds. The following diagrams summarize stakeholder roles in noxious weed prevention (Diagram 1) and specific steps for prevention of noxious weeds in conservation plantings (Diagram 2). The diagrams are followed by detailed information about methods for addressing Palmer Amaranth and other noxious weeds in conservation plantings. The information summarizes the role of project managers, local governments, vendors, landowners and agencies. Figures 1-3 provide examples of a label, seed testing results, and DNA tests needed to properly label native forb seed mixtures for sale. Figure 4 is a seed specification that can be included as part of project bids to address noxious weed issues.



Palmer amaranth

Diagram 1

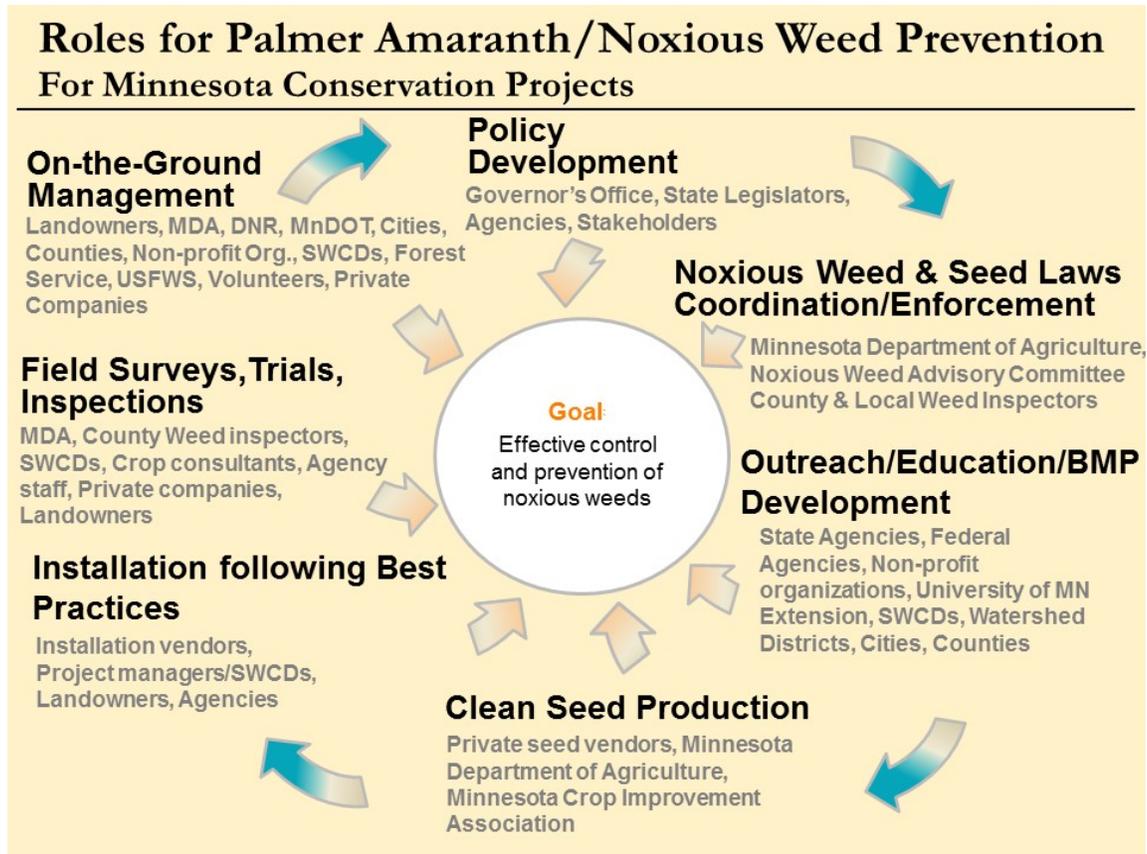
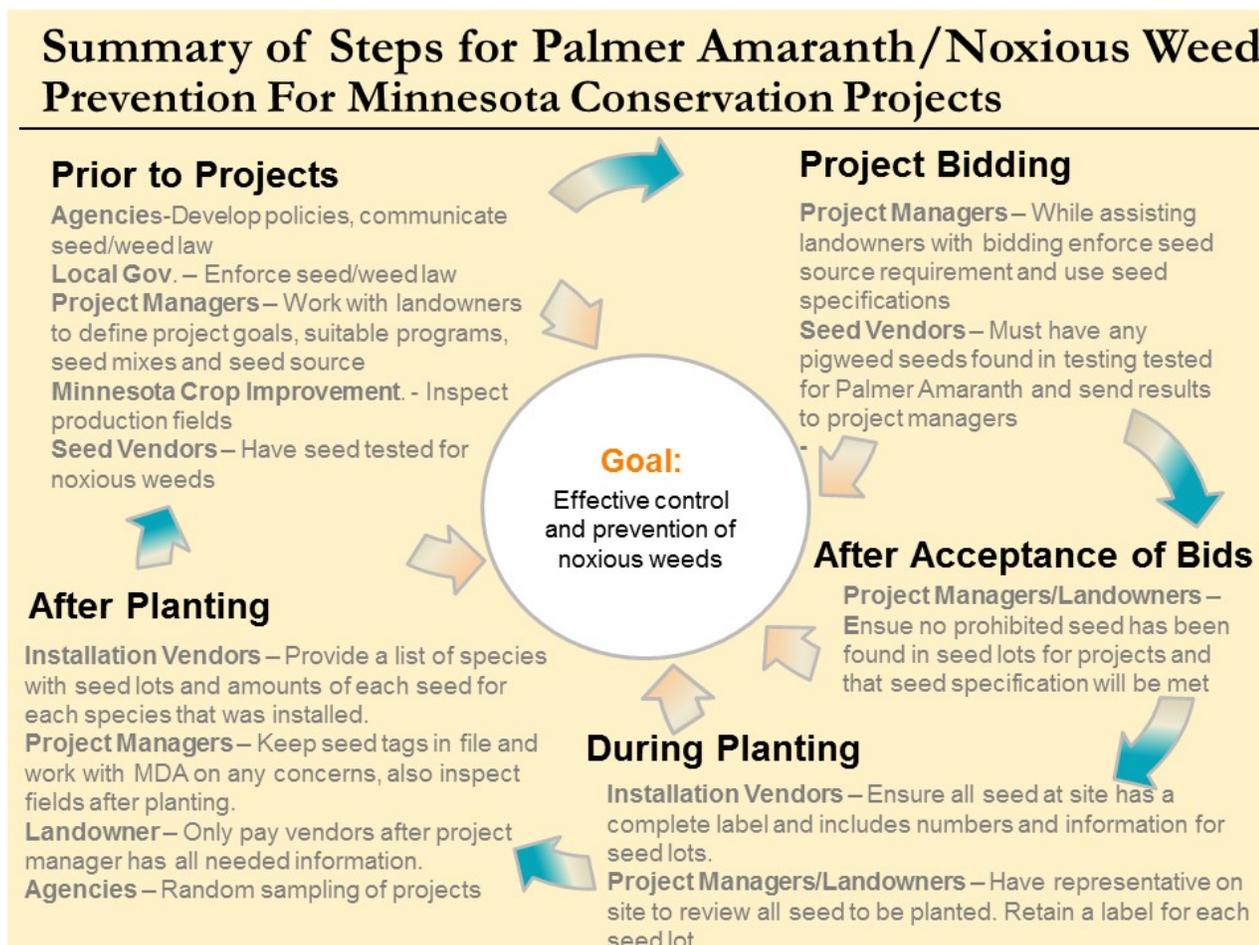


Diagram 2



Methods for Addressing Palmer Amaranth and Other Noxious Weeds

1) Prior to Projects

Agencies: Minnesota Department of Agriculture (MDA) is working with seed vendors to ensure that they know state requirements for meeting state and federal seed law requirements and are taking steps to prevent the introduction of noxious weeds. All vendors with a permit to label seed for sale in Minnesota are listed on the MDA website.

Local Governments: County, city and township officials inspect land and ask owners to control and eradicate noxious weeds that are present in order to keep them from spreading and harming neighboring lands.

Seed Production Vendors: To be in compliance with the state seed law, any seed being sold must be tested for weed seeds including restricted and prohibited noxious weed seeds. Seed that is harvested from the wild must also be tested for noxious weeds and labeled appropriately.

2) Project Bidding

Project Managers: Seed source requirements defined for projects must be followed and seed can only be purchased from vendors that provide the documentation listed in this guidance and meet other seed specifications for the projects. See the seed specifications below (figure 4).

Seed Production Vendors: If Amaranth species were found in the purity or noxious weed seed test, MDA requires that the vendor conduct a genetic test to determine if the Amaranth species are Palmer Amaranth. Genetic test results must be made available to MDA during inspections.

3) After Acceptance of Seed Bids

Project Managers: For acceptance of seed bids, project managers must ensure that vendors can meet all seed specifications.

Project Managers: Soon after the acceptance of a seed bid and any final changes to mixes, it is recommended that project managers have seed vendors provide a preliminary seed label/tag for the proposed seed mix(s). The manager should review the noxious weed seed section of the label (Fig. 1C). If any restricted noxious weed seeds are listed, the manager should confirm that in total there are less than 25 restricted noxious weed seeds per pound of the seed mix. A seed mix that contains any prohibited noxious weed seeds is not legal for sale in the state. If seed testing results are available for review (Fig. 2) the manager should review both the weed seed percentage, common weed seed found, and noxious weed seed sections of the Report of Analysis. Some labs provide a comprehensive list of all weed seeds found in the noxious exam. If Palmer amaranth or any Amaranth species is listed in the noxious weed seed section of the report (Fig.2C), the report should indicate whether genetic testing has been conducted. Most seed mixes are blended after each single species component has been tested, so a project manager may also receive seed testing results for each single component in the mixture. This review step is intended to allow project managers to verify the mix prior to seeding and the seed label/tag can be used to verify that the correct seed has been delivered to the targeted project site.

4) During Planting

Seed Installation Vendors: All seed delivered to sites must have a complete label and mixes must include information for individual seed components and their lot numbers. Installers must allow MDA staff to take seed samples when they arrive for a random planting inspection.

Project Managers: Have a representative on site at planting to review labels and other paperwork for all of the seed to be planted. All seed must be appropriately labeled and mixes must include information for individual seed components and their lot numbers. Reject any seed that does not have a label or does not correspond to the preliminary seed label/tag that was provided after acceptance of the seed bid. If seed substitutions are necessary, all required information must be provided in advance for the project manager's review. Reject any seed that does not have a label, is improperly labeled and/or does not correspond to the preliminary seed label/tag that was provided after acceptance of the seed bid.

Project Managers: Count the number of bags of each seed lot and retain a label for each lot indicating the number of bags at the site on the back of the label. Review the label(s) and contact MDA for a label review if there are any concerns.

5) After Planting

Seed Installation Vendors: Must provide a final list of species (with seed lots) and amounts of seed for each species planted for the project.

Project Managers: Keep the seed tags and a copy of the final list of species planted in the project file. Project managers should work with the MDA if they have any concerns about seed mixes. MDA can assist with taking official seed samples at planting, as needed. MDA also has an official [complaint process](#) for cases where there is reason to believe that a violation of state seed law has occurred.

Landowners: Project payments should not be made to seed installers until coordinating project managers feel confident that they have received all of the appropriate seed information for the project. Landowners should periodically inspect fields and report back to the project manager or MDA any observations of excessive weeds or plants of concern.

Project Managers: Project inspections by local staff with plant identification expertise will play an important role as a final assurance that Palmer Amaranth and other noxious weeds are not introduced into plantings.

Agencies: MDA will conduct a noxious weed seed exam on a random sample of native seed mixes collected in each county. They will work with each SWCD to establish a sampling plan for their district that defines a specific number of plantings to be sampled. MDA is also conducting field inspections for Palmer Amaranth and other noxious weeds through grant funding.

Figure 1. Example of a label for a native forb mixture. The lettered sections A, B, and C are related to the Report of Analysis for seed testing in Fig. 2. This seed would not be legal for sale in Minnesota because it contains Palmer Amaranth.

Native Forb Mixture									
Lot BPSIMN1802									
Kind	Variety	Source Lot	Genetic Origin	Pure Seed%	Germination %	Hard or Dormant%	Total Viable%	PLS%	
Partridge Pea	VNS	IA1010	IA	20.71	41	54	95	19.67	
Canada Tick Trefoil	VNS	MN2020	MN	20.18	36	61	97	19.57	
Wild Bergamot	VNS	MN2021	MN	10.05	78	10	88	8.84	
Black-eyed Susan	VNS	MN2023	MN	25.23	85	8	93	23.46	
Hoary Vervain	VNS	MN2024	MN	21.78	45	35	80	17.42	
Purity	97.95	A							
Other Crop	1.87								
Weed Seed	0.17								
Inert Matter	0.01								
Noxious Weeds	#/lb	C							
Giant Foxtail	21/lb								
Palmer amaranth	11/lb								
Test Date	12/1/2017								

B

Best Prairie Seed In Minnesota
100 Prairie Way
Green, MN 11111

Figure 2. Example of Report of Analysis for seed testing results from a native forb mixture. The purity analysis in section A, the viability analysis in section B, and the noxious weed seed exam in section C, all correspond to the same sections on the seed label in Fig. 1. This report shows a seed lot that is positive for Palmer Amaranth and indicates that genetic testing has been conducted. If this report were for a single species only one pure seed component would be listed on the purity analysis.

Name and Address of Testing Lab	
Sample number: 1539087	Sender's Information
Date Received 11/2/2017	Kind: Native Forb Mixture
Report Date: 12/19/2017	Varieties: Not Stated
	Lot Number: BPSIM1802

Tests Requested: Purity/Noxious All-States, Germination Tests	Origin: MN, IA
	Bag Weight: Not Stated
	Size of Lot: Not Stated
	Labeler's Name: Best Prairie Seed in Minnesota.
	Product Name: Native Forb Mixture
	Date Sampled: 10/2/17
Note: the information listed here is that of the send and not the laboratory	

Laboratory Test Results

Purity analysis	Viability analysis
-----------------	--------------------

4.488 g analyzed	%Pure Seed	%normal	%dormant	%hard	%total viable	Seeds tested	Days tested	Date Completed
Pure seed components								
Partridge Pea <i>Cassia fasciculata</i>	20.71	41	x	54	95	400	12	12/17/2017
Canada Tick Trefoil <i>Desmodium canadense</i>	20.10	36	x	61	97	400	12	12/17/2017
Wild Bergamot <i>Monarda fistulosa</i>	10.05	78	10	x	88	400	10	12/17/2017
Black-eyed Susan <i>Rudbeckia hirta</i>	25.23	85	8	x	93	400	12	12/17/2017
Hoary Vervain <i>Verbena stricta</i>	21.78	45	35	x	80	400	12	12/17/2017
Other Crop Seed	1.87	Comments: Palmer amaranth identification confirmed by PCR testing on single seeds.						
Inert Matter	0.01							
Weed Seed	0.17							

Other Crop Seed		All-States Noxious		Noxious weed seeds in 40.47 grams	
Kind:	No. found	Kind:	No. found	No./lb	
Illinois Bundleflower	4	Palmer Amaranth <i>Amaranthus palmeri</i>	6	11.1	
Purple Prairie Clover	2	Giant foxtail <i>Setaria faberii</i>	10	21.2	
New England Aster	1				

Inert matter	Other determinations:
Broken seed pieces, plant material, soil	Also found in 40.47 grams: 1 common lamb's quarters, 2 common chickweed

Common Weed Seed	Rules Followed: AOSA
Kind:	No. found

Lamb's Quarters <i>Chenopodium album</i> - 2	
--	--

Figure 3. Sample of Palmer Amaranth Test Report

Palmer Amaranth Report							
Customer Name: Best Prairie Seed in Minnesota					Date Received:		
Address:					Date Completed:		
Phone:					Date Reported:		
Sample Number	Customer Sample ID	Seed Number	Lot	Number of Seeds Tested	Plate	Well Location	Results Palmer Amaranth
217236321	1539087	1	BPSIM1802	1	A4211	A1	Negative
217236321	1539087	2	BPSIM1802	1	A4211	A2	Negative
217236321	1539087	3	BPSIM1802	1	A4211	A3	Negative
217236321	1539087	4	BPSIM1802	1	A4211	A4	Negative
217236321	1539087	5	BPSIM1802	1	A4211	A5	Negative
217236321	1539087	6	BPSIM1802	1	A4211	A6	Negative

Figure 4. Seed Specifications

Note: The following specifications are included in this bid package to help ensure the quality and success of the restoration or BMP project and to protect the integrity of local plant communities.

- Substitution of species in the specified seed mixes/species lists must be approved by the project manager.
- Yellow tag seed must be used if it is available, unless otherwise directed by the project manager.
- All seed that is supplied for projects must be labeled according to the requirements of the Minnesota Seed Law, section 21.82, including limits on noxious weed seed.
- The origin of seed is required to be listed on the seed tag for all species in a mix to provide verification of original (generation 0) seed source. The smallest known geographic area (township, county, ecotype region, etc.) shall be listed.
 - Information pertaining to pure seed, germination, and hard (dormant) seed of individual components in a mix is required on seed tags.
 - When submitting seed bids, seed vendors must list any Amaranth seeds that were found in official seed tests. If Amaranth species are found in the test results, the Minnesota Department of Agriculture (MDA) requires that the vendor pay for genetic testing to determine if the Amaranth seeds present are Palmer amaranth.
- Soon after the acceptance of a seed bid, seed vendors must provide a preliminary seed label/tag for the proposed seed mix that lists any regulated weed seeds (Restricted and Prohibited Noxious Weed seeds and other plant seeds not intended to be part of the mix) that were identified through official seed lot tests.
- Seed must be cleaned to an extent sufficient to allow its passage through appropriate seeding equipment.
- All wild harvest mixes must be tested. Germination, hard seed and Pure Live Seed information is required on seed tags for the number of species that are required through a program or project diversity standard. Any Amaranth species in wild harvest mixes must be identified and have the same genetic testing required for seed that is produced. There should also be categories for inert matter and weed seeds. Unless otherwise requested, small, large, and cover crop seeds should be packaged separately.
- Seed source standards for conservation programs must be followed for seed mixes. For Minnesota Board of Water and Soil Resources (BWSR) funded project the seed zone map and source sequence on page 8 of BWSR's Native Vegetation Establishment and Enhancement Guidelines must be followed for obtaining seed.
- All seed delivered to sites must have a complete label and include information about individual component seed lots. Installers must allow MDA staff to take seed samples when they arrive for a random inspection.
- A final list of species (with seed lot information) and amounts of each species seed planted for the project must be sent to project managers following the installation.
- Project contracts provided to landowners must state that if it can be determined that seed installers were responsible for introducing regulated state noxious weeds into plantings, seed installers will be responsible for controlling or eradicating noxious weeds on those properties for a time that is sufficient to be effective.

Note: When using these specifications for bidding, it is also recommended to include a seed zone map. Upon project installation retain and file all seed information.

Appendix B: Cooperative Weed Management Area (CWMA) Grant Program

Program Purpose: To establish strong and sustainable CWMA's across Minnesota for the effective control of invasive species and protection of conservation lands and natural areas.

What is a CWMA? ...a local organization that provides a mechanism for sharing invasive species management resources across jurisdictional boundaries in order to achieve widespread invasive species prevention and control.

Reasons CWMA's are Needed Across Minnesota

- 1) They provide effective weed mapping, education, outreach and management leading to the control of emerging and established invasive species.
- 2) They work effectively across geographic and ownership boundaries.
- 3) They develop strong partnerships to leverage expertise and funding
- 4) They help prevent significant ecological and economic losses from invasive species
- 5) They protect the diversity and resiliency of natural areas and conservation lands.



Roseau CWMA working with County Commissioners

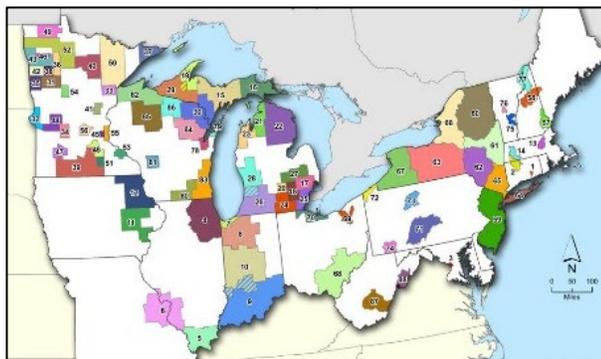
CWMA and Program Funding History:

CWMA's started in western states to manage grazing lands. Clay County had the first Minnesota CWMA, acting as a model for the BWSR program that started in 2008.

- FY 2008/2009 - \$400,000 (legislative appropriation)
- FY 2010/2011 - \$200,000 (legislative appropriation)
- FY 2012 - \$232,470 (funded with cost-share roll-over funds)
- FY2013 – No funding available
- FY 2014/2015 - \$200,000 (legislative appropriation)
- FY 2016/2017 - \$200,000 (legislative appropriation)
- FY 2018/2019 - \$200,000 (legislative appropriation)

Current Status of Program

Minnesota CWMA's cover 43 counties, making the state on-par with other Midwest states. Future funding sources will be needed to develop new groups and sustain existing groups.

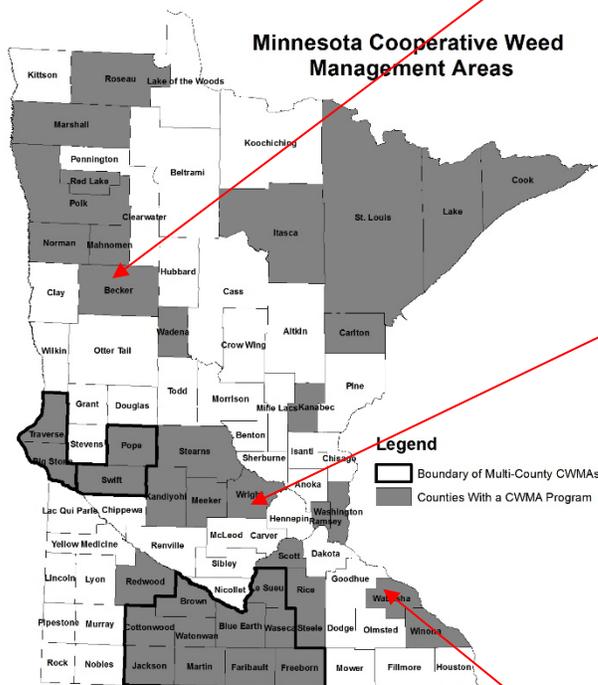


CWMA Models

The following are three examples of how CWMA's are tackling weed issues across Minnesota.



Marsha Watland of Becker CWMA meeting with landowners



Becker CWMA

Focus: Emerging weed threats- crown vetch, common tansy, spotted knapweed, leafy spurge, wild parsnip.

Started: 2006 with a National Fish and Wildlife Foundation Grant (NFWF).

Mapping: Conducted baseline GIS mapping of all invasive weeds in the county.

Management Action: Combined manual, biological and cultural treatments for target species across the county.

Strength of Program: Through mapping, partnering with the County Hwy. Dept., establishment of a gravel pit certification program and developing a landowner cost-share program they have achieved effective control of weeds in the county.

Wright CWMA

Focus: Wild Parsnip control (a significant agricultural, ecological, and human health threat to the county), now adding other species.

Started: 2008 with BWSR Funding.

Mapping: GIS Mapping of parsnip locations across county.

Management Action: Worked with over 100 landowners and treated 11,000 acres.

Strength of Program: Partnership with County Hwy. Dept., Townships and Landowners to halt the spread of an emerging weed threat.



Terri Peters of Wabasha CWMA monitoring invasive species

Wabasha CWMA

Focus: Addressing emerging weed threats from Japanese knotweed and Japanese barberry, as well as common buckthorn and invasive honeysuckle shrubs.

Started: 2008 with BWSR Funding, developed own cost-share program.

Mapping: GIS Mapping of 1000 acres of invasive species populations.

Management Action: Over 150 acres have been treated for removal of invasive species in important habitat areas.

Strength of Program: Effective control of emerging weed threats. Focus on protecting intact plant communities

Appendix C: Guidance for Staff and Contractors to Prevent the Spread of Invasive Species

Staff Guidance for Visiting or Conducting Work in Project Sites

The following information summarizes considerations for staff who are visiting restoration sites and native plant communities. Adapted from Minnesota DNR Guidance.

Before you arrive at a work site and before you leave:

- Inspect all equipment (boats, trucks, gear, machinery, etc.) for and remove all visible plants, seeds, mud, soil, and animals from your equipment, boots, etc.
- Drain water from any equipment, tanks, or water-retaining components of boats such as motors, live well, bilge, or transom wells onto dry land.
- After working on infested waters or waters known to harbor pathogens of concern, clean and dry equipment prior to using in locations not known to be infested with species or pathogens present at the last location visited. [Drain plug must be pulled](#) between waters.

When moving materials:

- Do not transport water from infested waters, except by [permit](#).
- Use only mulch, soil, gravel, etc. that is invasive species-free or has a very low likelihood of having invasive species.
- Inspect transplanted vegetation for signs of invasive species that may be attached to the vegetation and remove (i.e. other plant material and animals etc).
- Do not move soil, dredge material, or raw wood products that may harbor invasive species from infested sites.

Planning:

- Check each project site for invasive species infestations prior to management activity
- Work first in non-infested areas and then move to infested areas
- Minimize disturbance
- Preserve existing native vegetation
- Consider whether the source of materials to be use for a project are invasives-free

Contractor Invasive Species Guidance/Specifications:

The following information lists potential specification language to define the role of contractors in preventing the spread of invasive species:

The Contractor shall prevent invasive species from entering into or spreading within a project site by cleaning equipment and clothing prior to arriving at the project site.

If the equipment or clothing arrives at the project site with soil, aggregate material, mulch, vegetation (including seeds) or animals, it shall be cleaned by Contractor furnished tool or equipment (brush/broom, compressed air or pressure washer) at the staging area. The Contractor shall dispose of material cleaned from equipment and clothing at a location determined by the Project Supervisor. If the material cannot be disposed of onsite, secure material prior to transport (sealed container, covered truck, or wrap with tarp) and legally dispose of offsite.

If the Project Supervisor has determined that invasive species are within the project limits, the parking and staging areas and travel routes shall not be within the invasive species area, if possible. The Contractor shall clean equipment and clothing and dispose of material as noted above, prior to leaving the project limits.

If the Project Supervisor or Contractor discovers additional invasive species infestation areas during the course of the project, the Contractor is to stop operations in the newly discovered infested area until a resolution can be accepted by the Project Supervisor.

Appendix D: Invasive Plant Species Definitions

Invasive species are species that are not native to Minnesota and cause economic or environmental harm or harm to human health. BWSR uses the Minnesota DNR “Plant Checklist” ([Excel](#) or [pdf](#)) for BWSR Native Vegetation Establishment and Enhancement Guidelines as well as for administration of the Wetland Conservation Act to list what species are non-native and cannot be planted with BWSR funding or on wetland replacement projects. The lists also designates which plant species are Minnesota designated Noxious Weeds.

The definition of Minnesota Noxious weeds is similar to the definition of invasive species but noxious weeds are associated with the Minnesota Noxious Weed Law. The Minnesota Noxious Weed Law ([MN Statutes 18.75-18.91](#)) defines a noxious weed as an annual, biennial, or perennial plant that the Commissioner of Agriculture designates to be injurious to public health, the environment, public roads, crops, livestock or other property. Prohibited noxious weeds must be controlled or eradicated as required in [Minnesota Statutes, section 18.78](#).

Additionally, transportation, propagation, or sale of noxious weeds is prohibited except as allowed by [Minnesota Statutes, Section 18.82](#). See the Minnesota Department of Agriculture’s [Noxious Weed List](#) website for description of categories including prohibited noxious weed: eradicate list, prohibited noxious weed: control list, and specially regulated plant.

In some cases, the list of species on the [DNR invasive plant webpage](#) (both terrestrial and aquatic pages) is used to help with decision making about what non-native species (that may be found on DNR “checklist” of native vs. non-native species) should be prioritized for management on conservation projects and wetland replacement projects.

Appendix E: Literature Cited

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4. National Invasive Species Council. 2008. 2008–2012 National Invasive Species Management Plan. 35 pp.
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