



# Environment and Natural Resources Trust Fund

2024 Request for Proposal

## General Information

**Proposal ID:** 2024-089

**Proposal Title:** Minnesota Invasive Terrestrial Plants and Pests Center, 6

## Project Manager Information

**Name:** Robert Venette

**Organization:** U of MN - MITPPC

**Office Telephone:** (612) 301-1405

**Email:** venet001@umn.edu

## Project Basic Information

**Project Summary:** The Minnesota Invasive Terrestrial Plants and Pests Center (MITPPC) requests \$7 million to fund up to 15 new, high-priority applied TIS research projects to improve Minnesota's natural and agricultural resources.

**Funds Requested:** \$7,000,000

**Proposed Project Completion:** June 30, 2029

**LCCMR Funding Category:** Aquatic and Terrestrial Invasive Species (D)

## Project Location

**What is the best scale for describing where your work will take place?**

Statewide

**What is the best scale to describe the area impacted by your work?**

Statewide

**When will the work impact occur?**

In the Future

## Narrative

### **Describe the opportunity or problem your proposal seeks to address. Include any relevant background information.**

Terrestrial invasive species (TIS) affect nearly every Minnesotan and terrestrial landscape. Invasive weeds, pathogens, insects, and arthropods threaten to lower the biodiversity and aesthetic value of prairies and wetlands, increase damage to urban and rural forests, and increase economic damage to grain and fruit producers. In total, terrestrial invasive plants and pests cost Minnesotans at least \$3 billion annually. They threaten our food systems, wildlife, recreation spaces, food security, economy and occasionally our health.

For example: Dutch elm disease, emerald ash borer, buckthorn, oak wilt, mountain pine beetle and other pests have dramatically changed the way American forests look, feel, and function. Terrestrial invasive species threaten the diversity of native plants, pollinators and wildlife across all ecosystems. Controlling them often carries both an environmental and economic cost due to the use of pesticides and the investment of human labor. New invasive threats will continue to emerge as climate, global trade, land use and human behaviors shift over time.

MITPPC is the go-to entity for transformative solutions to the greatest TIS threats to the state. MITPPC is a formal partner in Minnesota's statewide invasive species management plan (see: [mninvasives.org](http://mninvasives.org)). This proposal allows the important work of MITPPC to continue.

### **What is your proposed solution to the problem or opportunity discussed above? Introduce us to the work you are seeking funding to do. You will be asked to expand on this proposed solution in Activities & Milestones.**

Invasive plants, pests, and pathogens threaten Minnesota's prairies, wetlands, forests, and agricultural resources. Efficiently protecting Minnesota's lands requires new tools and techniques that can only be developed through applied research and implemented by engaged partners. The MITPPC relies on a dynamic, strategic prioritization process to identify the invasive species that pose the greatest threats to Minnesota's natural and agricultural resources and focuses investments on these high-rated threats. Each proposal is extensively vetted by internal and external reviewers with expertise in terrestrial invasive species research. Proposals are carefully considered and evaluated on a number of criteria, including urgency, extent of impact, contribution to the field, and innovation. The value-added benefits of the center approach extends to (i) leveraging previous/ongoing research efforts, (ii) facilitating new research team development, (iii) convening stakeholders on a terrestrial invasive species topics, particularly on issues that affect both the agricultural and natural resource sectors, and (iv) providing administrative and communications support. MITPPC works beyond traditional communication outlets so that diverse communities learn about, engage in, and benefit from research results. Interdisciplinary teams and partnerships with key stakeholders are an integral component of our research approach and assist with research result dissemination to wide audiences.

### **What are the specific project outcomes as they relate to the public purpose of protection, conservation, preservation, and enhancement of the state's natural resources?**

MITPPC research produced on-the-ground management alternatives for the control of TIS which have resulted in increased yields, while decreasing the amounts of pesticides and herbicides from soybean to raspberry production. Foresters now have new information on spongy moth movement which will help prevent its spread. Genetic research developed the most reliable method to identify Palmer amaranth seeds in seed mixes. Breakthroughs in buckthorn research and its relationship with native vegetation, improves outcomes for forests, pollinators, and soybean production. Early detection and distribution tools have assisted land managers address oak wilt, soybean aphid, and numerous TIS plants and insects.

## Activities and Milestones

### Activity 1: Accelerate research on high priority, terrestrial invasive species

**Activity Budget:** \$7,000,000

**Activity Description:**

Research projects will focus on solutions to protect Minnesota's forests, prairies, wetlands, and agricultural resources from the greatest TIS threats to the state, as determined through MITPPC's peer-reviewed prioritization process. While most of these species occur in or near Minnesota, some do not. Some research will focus on technologies and techniques to predict and prevent threats, like mountain pine beetle, from arriving in the state. Other research will address early detection and rapid responses to threats that are newly arrived, like Palmer amaranth. Other applied research will address well-known issues, like Dutch elm disease, that have proven difficult to manage with traditional approaches.

It is anticipated that 15 new lines of high-priority research projects would be funded, and fund up to eleven graduate students and 12 post-doctoral associates. With this investment, a new generation of applied scientists will be cultivated who will address current and future terrestrial invasive species threats to Minnesota.

The research has resulted in practical tools that are helping invasive species managers across Minnesota. Example of tools include new plant varieties with resistance to invasive species, new biological control options, advances in integrated pest management, and several options to detect invasive species through remote sensing.

**Activity Milestones:**

Description	Approximate Completion Date
New tools and technologies developed to detect and characterize the distribution of invasive species.	June 30, 2029
New, effective prevention and management alternatives developed and tested.	June 30, 2029
Predictive tools created to account for invasive species issues under future conditions.	June 30, 2029
Socio-economic analyses completed to better gauge impacts from, and responses to, terrestrial invasive species	June 30, 2029

## Project Partners and Collaborators

Name	Organization	Role	Receiving Funds
TBD	TBD	Each project is strongly encouraged to partner with an external partner. Current examples include the Minnesota Departments of Agriculture, Natural Resources, and Transportation, the US Forest Service, Minnesota Soybean Research and Promotion Council, Fond du Lac Band of Lake Superior Chippewa, and Friends of the Mississippi, among others.	No

## Long-Term Implementation and Funding

**Describe how the results will be implemented and how any ongoing effort will be funded. If not already addressed as part of the project, how will findings, results, and products developed be implemented after project completion? If additional work is needed, how will this work be funded?**

Findings will be shared with agencies and citizen groups so that public information and decision making is based on the best available science. Updates on progress and research results will be disseminated through University of Minnesota, College of Food, Agricultural, and Natural Resource Sciences, and College of Biological Sciences via websites, social media, publications, and media releases. Findings will be presented at local and national conferences and via peer-reviewed publication and student theses. The Minnesota Environment and Natural Resources Trust Fund (ENRTF) will be acknowledged, including through use of the trust fund logo.

## Other ENRTF Appropriations Awarded in the Last Six Years

Name	Appropriation	Amount Awarded
Minnesota Invasive Terrestrial Plants and Pests Center	M.L. 2014, Chp. 312, Sec. 8	\$1,460,000
Minnesota Invasive Terrestrial Plants and Pests Center	M.L. 2015, Chp. 76, Sec. 2, Subd. 06a	\$5,000,000
Minnesota Invasive Terrestrial Plants and Pests Center - Phase III	M.L. 2016, Chp. 186, Sec. 2, Subd. 06a	\$3,750,000
Minnesota Invasive Terrestrial Plants and Pests Center - Phase 4	M.L. 2018, Chp. 214, Art. 4, Sec. 2, Subd. 06a	\$3,500,000
Minnesota Invasive Terrestrial Plants And Pests Center, Phase5	M.L. 2021, First Special Session, Chp. 6, Art. 5, Sec. 2, Subd. 06a	\$5,000,000
Minnesota Invasive Terrestrial Plants and Pests Center	M.L. 2022, , Chp. 94, Art. , Sec. 2, Subd. 06a	\$6,230,000

## Project Manager and Organization Qualifications

**Project Manager Name:** Robert Venette

**Job Title:** Director, MITPPC

**Provide description of the project manager's qualifications to manage the proposed project.**

Dr. Venette is the half-time director of the MITPPC, a research biologist with the US Forest Service, and an adjunct associate professor in Entomology at the University of Minnesota. Dr. Venette specializes in the areas of pest risk assessment and invasion biology. His research primarily focuses on invasive insects, pathogens, and plants that are not known to occur in the United States or are present but of limited distribution. He has authored or co-authored more than 100 research articles, delivered more than 300 research presentations, and several million dollars in research grants. Dr. Venette is the inaugural director of the MITPPC and has served in that capacity since 2015. He has been responsible for conceiving research ideas, assembling interdisciplinary teams, securing funding, conducting research, disseminating results, and remaining accountable for the expenditures of funds. As such, Dr. Venette has the qualifications to manage joint and interdisciplinary projects such as MITPPC and has demonstrated success in doing do

throughout his career. He has the managerial, personnel, and financial skills necessary to successfully implement a diverse project of this scale.

**Organization:** U of MN - MITPPC

**Organization Description:**

The MITPPC was established at the University of Minnesota under ML 2014, Chapter 312, Article 13, Section 44. The MITPPC is administratively located in the College of Food, Agricultural, and Natural Resources Sciences. Activities of the MITPPC are conducted in close collaboration with state, federal, local and tribal governments, nongovernmental agencies, the private sector, University of Minnesota Extension, and other colleges and universities. The MITPPC leverages talent and resources from the entire University of Minnesota system, including its five campuses and ten Research and Outreach Centers across Minnesota.

## Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	\$ Amount
<b>Personnel</b>								
Research faculty/summer salary		Principal investigator			37%	0.75		\$49,333
Associate director		Admin and program support for research projects			37%	2		\$200,000
Communications specialist		Communication support for research project's result dissemination			37%	2		\$113,248
Graduate research assistant		Conduct research experiments and analysis			24%	2		\$280,000
Post-doctoral associate		Conduct research experiments and analysis			26%	4		\$360,000
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Graduate research assistant		Conduct research experiments and analysis			24%	2		\$280,000
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Research faculty/summer salary		Principle investigator			37%	1		\$49,333
Director		Principal investigator			37%	1		\$200,000
Research faculty/summer salary		Principal investigator			37%	1		\$49,333
Post-doctoral associate		Conduct research experiments and analysis			26%	4		\$360,000
Post-doctoral associate		Conduct research experiments and analysis			26%	4		\$360,000
Research faculty/Summer salary		Principal investigator			37%	0.75		\$49,333
Graduate research assistant		Conduct research experiments and analysis			24%	2		\$280,000
Research faculty/summer salary		Principal investigator			37%	0.75		\$49,333
							<b>Sub Total</b>	<b>\$5,879,913</b>
<b>Contracts and Services</b>								
TBD	Professional or Technical Service Contract	Biosecurity lab space rental				0		\$100,000
TBD	Professional or Technical Service Contract	DaRT and genome sequencing services				0		\$100,000
TBD	Professional or Technical Service Contract	Minnesota Supercomputing Institute				-		\$105,000

TBD	Professional or Technical Service Contract	Scientific consultation with with external expertise				0		\$250,000
TBD	Professional or Technical Service Contract	Tree and brush removal				0		\$100,000
TBD	Professional or Technical Service Contract	Multi-media production for dissemination of results				0		\$40,000
							<b>Sub Total</b>	<b>\$695,000</b>
<b>Equipment, Tools, and Supplies</b>								
	Tools and Supplies	Consumable lab materials	To conduct bench and field research					\$211,087
							<b>Sub Total</b>	<b>\$211,087</b>
<b>Capital Expenditures</b>								
							<b>Sub Total</b>	-
<b>Acquisitions and Stewardship</b>								
							<b>Sub Total</b>	-
<b>Travel In Minnesota</b>								
	Miles/ Meals/ Lodging	In-state travel for field research	In-state travel for field research related to MITPPC projects					\$100,000
							<b>Sub Total</b>	<b>\$100,000</b>
<b>Travel Outside Minnesota</b>								
	Conference Registration Miles/ Meals/ Lodging	One out-of-state conference per research project	Dissemination of research results to peers and colleagues	X				\$30,000



							<b>Sub Total</b>	<b>\$30,000</b>
<b>Printing and Publication</b>								
	Publication	Peer reviewed journal submission fees	To disseminate peer-reviewed scientific findings resulting from research					\$84,000
							<b>Sub Total</b>	<b>\$84,000</b>
<b>Other Expenses</b>								
							<b>Sub Total</b>	-
							<b>Grand Total</b>	<b>\$7,000,000</b>

## Classified Staff or Generally Ineligible Expenses

Category/Name	Subcategory or Type	Description	Justification Ineligible Expense or Classified Staff Request
<b>Travel Outside Minnesota</b>	Conference Registration Miles/Meals/Lodging	One out-of-state conference per research project	LCCMR allows one out-of-state conference per research team

Non ENRTF Funds

Category	Specific Source	Use	Status	Amount
State				
			State Sub Total	-
Non-State				
			Non State Sub Total	-
			Funds Total	-

## Attachments

### Required Attachments

#### *Visual Component*

File: [210b360e-d7e.pdf](#)

#### *Alternate Text for Visual Component*

The document describes the MITPPC and provides an overview of funded research projects....

### Optional Attachments

#### *Support Letter, Photos, Media, Other*

Title	File
UMN Regents support letter for MITPPC proposal	<a href="#">dd5b77a0-3cf.pdf</a>

## Administrative Use

**Does your project include restoration or acquisition of land rights?**

No

**Does your project have potential for royalties, copyrights, patents, or sale of products and assets?**

No

**Do you understand and acknowledge IP and revenue-return and sharing requirements in 116P.10?**

N/A

**Do you wish to request reinvestment of any revenues into your project instead of returning revenue to the ENRTF?**

N/A

**Does your project include original, hypothesis-driven research?**

Yes

**Does the organization have a fiscal agent for this project?**

No

**Does your project include the design, construction, or renovation of a building, trail, campground, or other capital asset costing \$10,000 or more?**

No

**Do you propose using an appropriation from the Environment and Natural Resources Trust Fund to conduct a project that provides children's services, as defined in Minnesota Statutes section 299C.61 Subd.7?**

No