



**SOUTH DAKOTA
STATE UNIVERSITY**
Native Plant Initiative

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Why Native Plants?

Problem

Less than 10% of the prairies of the Northern Great Plains still exist. Historically, our prairies were rich with abundant native grasses and wildflowers. Now, 90% of those prairies are gone with more being lost each year. The prairies left are degraded and depauperate of native plants. This loss of native plants on the landscape has serious implications.

Native plants are the backbone of prairies. Native plants provide habitat and resources for wildlife, birds, butterflies, bees, and other insects. Native plants improve soil health, stop erosion, and improve water quality in our lakes, streams, and rivers. Native plants provide a charismatic sense of place in our important and picturesque region.

Restoring native plants is essential. Native plants can be returned to the land in our prairies, pastures, in public and private landscaping, and on farms. Opportunities are plentiful, but the current knowledge of native plant restoration, production, and landscaping is inadequate in the Northern Great Plains. Therefore, the Native Plant Initiative at South Dakota State University aims fill this knowledge gap.

Solution

South Dakota State University is a leader in producing rigorous, innovative, and reliable information for the Northern Great Plains. Local, regional, and global agriculture has benefited tremendously from the information produced by SDSU. We have the expertise, facilities, and reputation to become a leader in native plant production and restoration.



A selection of NPI plants prepped for a plant sale. Photo credit: Lora Perkins

Native Plant Initiative

Formed in 2019, the Native Plant Initiative seeks to highlight and elevate the work on native plants that is conducted at South Dakota State University and by collaborators in the region.

Mission

To conduct research, education, and outreach to support excellence in native plant restoration and production in the Northern Great Plains

Vision

- To produce rigorous, innovative, and reliable data-driven science to inform native plant restoration and production
- To disseminate this information to the scientific community, stakeholders, public and private land managers, and the public
- To engage students at every level (K-12, undergraduate, and graduate) in our research and outreach activities

Future of the Native Plant Initiative

The long-term goal for the NPI is to become endowed and transform into a permanent Institution at South Dakota State University.

- The **Native Plant Institute at South Dakota State University** that is the go-to leader both nationally and internationally for research, education, and outreach for the public and anyone involved in the native plant material industry.



Figure 2. Groups targeted for information transfer from the Native Plant Initiative.

Team

Lead faculty

Lora Perkins

Dr. Perkins received her PhD in the Department of Natural Resource and Environmental Science at the University of Nevada, Reno in December 2010. After joining the faculty at SDSU, her research focused on understanding and controlling invasive plants and restoration of native plants. She has received greater than \$6 million in research funds from National Agencies and has trained numerous undergraduate students and graduate students at both at MS and PhD levels. In 2018, Dr. Perkins and collaborator Dr. A. Joshua Leffler received the *Bradshaw Medal from the Society of Ecological Restoration* for outstanding contribution to the field. On 2022, Dr. Perkins was awarded the Polaris Habitat Stewardship Award from Pheasants Forever.

Collaborators at SDSU

Amanda Bachmann, SDSU Extension Pesticide Education & Urban Entomology Field Specialist

Arvid Boe, Professor, Department of Agronomy, Horticulture & Plant Science

Krista Ehler, Assistant Professor & SDSU Extension Range Specialist

Gary Hatfield, Associate Professor, Department of Math & Statistics

Kristine Lang, SDSU Extension Consumer Horticulture Specialist

Maribeth Latvis, Assistant Professor, Director of SDSU Taylor Herbarium

A. Joshua Leffler, Associate Professor, Department of Natural Resource Management

Candace May, Assistant Professor, School of Psychology, Sociology and Rural Studies

Madhav Nepal, Associate Professor, Department of Biology and Microbiology

Alexander Smart, SDSU Extension Agriculture & Natural Resources Senior Program Leader

Lan Xu, Professor, Department of Natural Resource Management



Support provided by

- Dr. Michele Dudash and the Department of Natural Resource Management
- Dr. David Wright and the Department of Agronomy, Horticulture & Plant Science
- Agricultural Experiment Station at South Dakota State University
- Bureau of Land Management
- United States Department of Agriculture, Natural Resource Conservation Service
- United States Department of Agriculture, National Institute of Food and Agriculture
- Private endowments through South Dakota State University Foundation

Stakeholders

Stakeholders for the Native Plant Initiative include everyone involved in the native plant materials industry and anyone enthusiastic about native plants. NPI aims to provide rigorous information generated through innovative research and demonstration to:

- Private growers interested in including native seed production on their farms
- Individuals and companies involved in the native seed and plant market
- Professional and private landscaping
- Land managers and restoration practitioners restoring native plant communities
- Native seed collectors
- Researchers and the scientific community working on native plants

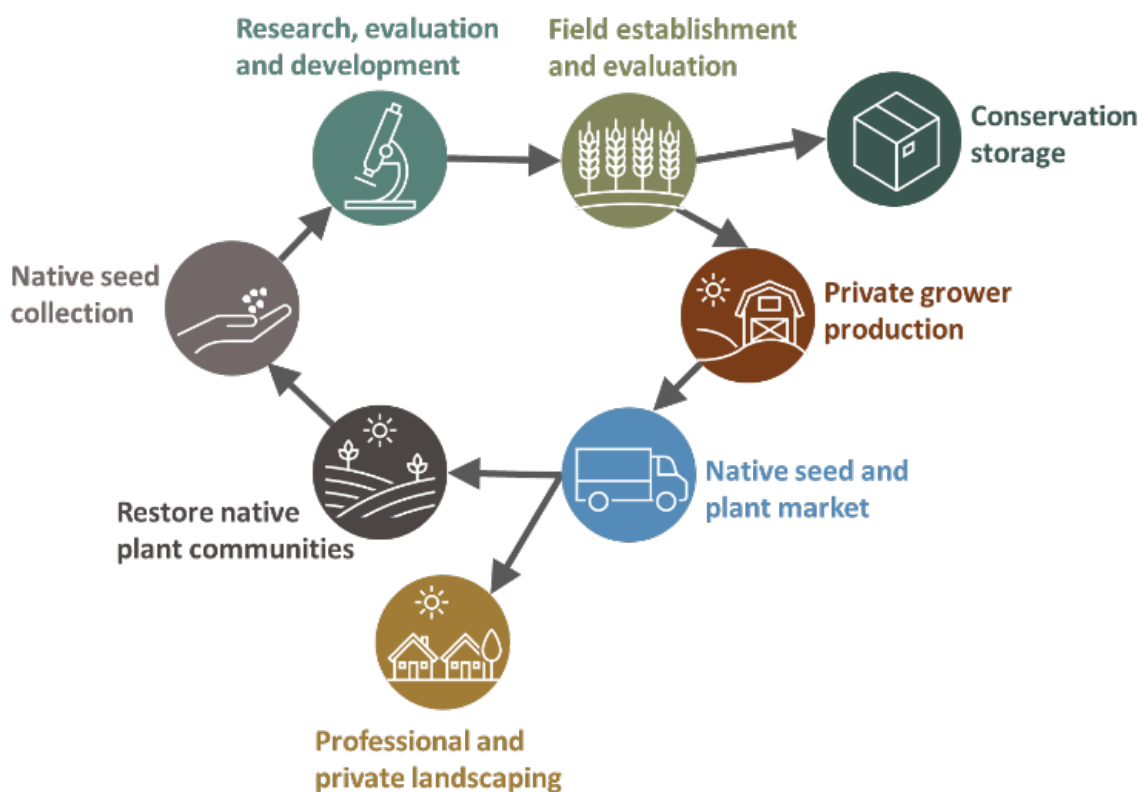


Figure 3. NPI collaborates with native seed collectors who provide the locally sourced seed for research, evaluation, and development. These seeds are then either placed in our conservation storage or grown in the field for evaluation and protocol development. The information on species-specific production protocols is then transferred to private growers. It is then our hope that private growers will produce native seeds and plants that will then enter the native seed market to be sold for use in professional and private landscaping or used for grassland restoration.

Financial plan

Cost of operation

A year of greenhouse and field production for the Native Plant Initiative costs approximately \$17,000*. This covers the cost of seed, greenhouse and field rent, materials, supplies, and 480 hours of undergraduate salary.

**These costs do not cover time for lead faculty or collaborators, travel, or outreach.*

Revenue streams

➤ *Plant and seed sales*

Proceeds from plant and seed sales can be used for general operations.

- Our current greenhouse capacity is 30,000 plants. Financial analysis indicates that each plant costs approximately \$0.82 to produce. With a wholesale price of \$3.00 per plant, 8,166 plants need to sell to cover production costs.
- In 2020 and 2021, we produced and sold plants as proof of concept. We sold 2,077 plants through 3 outlets in 2020. In 2021, this increased to 2,300 plants through 6 outlets. NPI has been contacted by restoration organizations, governmental organizations, greenhouses, and individuals interested in purchasing native plants. **The potential for growth is substantial.**
- Seed sales are pending.

➤ *Research grants*

Research grants support research and outreach on a specific topic, not general operations. NPI faculty have been successful receiving competitive national grants.

- Flower fields and soils: The impacts of native perennial monoculture plots on soil health. *United States Department of Agriculture, National Institute of Food and Agriculture. \$499,436*
- Environmental Sustainability of Rangeland Livestock Production: Decomposition, Dung Beetles, and Decision Making. *United States Department of Agriculture, National Institute of Food and Agriculture. \$486,000*
- Seeding Northern Great Plains Degraded Saline/Sodic Soils to Perennial Plants. *United States Department of Agriculture Natural Resources Conservation Service. \$1,351,758*
- Determining germination requirements for high priority native plants. *Bureau of Land Management, \$99,997*
- Deciphering diversity for landowners: identifying restoration targets to best support soil health and pollinators in the Northern Great Plains. *United States Department of Agriculture Natural Resources Conservation Service. \$654,336*
- Environmental and Genetic Determinants of Seed Quality and Performance. *United States Department of Agriculture, Hatch Multi-State. \$120,000*

Gaps

Currently, our research productivity is exceeding expectations. However, our outreach and plant and seed sales have tremendous room for growth. Key needs for our path forward include:

- ✓ To expand our outreach and plant/seed sales, we need someone with time dedicated to social media, developing educational materials, and coordinating plant and seed sales. This would be a full-time position, no advanced degree required.
- ✓ Endowed faculty positions are critical to achieving premier levels of success and distinction in both academic programs and research at all universities. Creating an endowed chair to lead the Native Plant Initiative would allow opportunity to accomplish things that otherwise would not be possible in the quest for academic and research excellence.
- ✓ Facilities at SDSU are currently sufficient for NPI. A short-term future need is a cold chamber or room for proper curation of the conservation seed collection.
- ✓ NPI is currently in need of seed harvesting and cleaning equipment. An investment of \$24,000 would enable us to purchase a small-scale seed harvester, thresher, and laboratory seed cleaner which would increase our capacity to produce marketable seed.



Erysimum asperum in bloom at our seed production field.

