

**North Dakota Industrial Commission  
Outdoor Heritage Fund Grant Application**

Name of Organization: North Dakota State University

Federal Tax ID#: 45-6002439

Contact Person/Title: Amy Scott – Authorized Organizational Representative  
Principal Investigator (PI): Dr. Todd P. West – Associate Professor of Horticulture and  
Director of NDSU Woody Plant Improvement Program

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**MAJOR Directive:** Choose only one response

Directive A. Provide access to private and public lands for sportsmen, including projects that create fish and wildlife habitat and provide access for sportsmen;

Directive B. Improve, maintain, and restore water quality, soil conditions, **plant diversity**, animal systems and to support other practices of stewardship to enhance farming and ranching;

Directive C. Develop, enhance, conserve, and restore wildlife and fish habitat on private and public lands; and

Directive D. Conserve natural areas for recreation through the establishment and development of parks and other recreation areas.

**Additional Directive:** Choose all that apply

Directive A. Provide access to private and public lands for sportsmen, including projects that create fish and wildlife habitat and provide access for sportsmen;

Directive B. Improve, maintain, and restore water quality, soil conditions, plant diversity, animal systems and to support other practices of stewardship to enhance farming and ranching;

Directive C. Develop, enhance, conserve, and restore wildlife and fish habitat on private and public lands; and

Directive D. Conserve natural areas for recreation through the **establishment and development of parks** and other recreation areas.

**Type of organization:**

State Agency

Political Subdivision

Tribal Entity

Tax-exempt, nonprofit corporation, as described in United States Internal Revenue Code (26 U.S.C. § 501 (c))

**Project Name**

Selection and Evaluation of Ornamental Woody Plants Suitable for Parks, Recreational Areas and City Plantings for Western North Dakota

**Abstract/Executive Summary**

There is a deficiency of adapted, winter hardy, pest resistant woody plants suitable for park and recreational landscape use in Western North Dakota. There has been a significant increase in the population of North Dakota and a significant increase to the need of suitable recreational green space, which includes ornamental landscape plants. Many of the commercially available landscape nursery stock are not suited for the North Dakota climate and/or soil types found across the state. Much of the nursery stock that is commercially available is more suited for USDA hardiness zone 5 and warmer. The focus of this project is to select and evaluate potential woody species to enhance, diversify and increase the inventory of usable landscape plants for USDA hardiness zones 3 – 4. Objectives of this project include: 1. Identify sources of woody plant germplasm, 2. Evaluate accessions of new or untested species to determine establishment, winter and drought hardiness, soil adaptation, pest susceptibility, aesthetic characteristics and survival, 3. Establish practical means of propagating selected woody plants along with rootstock grafting trials, and 4. Evaluate recreational park plantings of candidate species and/or cultivars in Western North Dakota. There are numerous species that have not been evaluated and have potential for use in this climate. Many of the U.S. nursery standards are not viable for this climate because of issues of hardiness as well as rootstock issues resulting from grafting. This method of increasing plant numbers using grafting has several limitations in Northern Dakota because many of these plants are produced in warmer climates and utilize rootstocks that may not be fully compatible or are not entirely hardy to this colder climate. This project would include evaluations and trial plantings at the ND Agriculture Experiment Station (NDAES) – Williston Research Extension Center (REC), NDSU Dale E. Herman Research Arboretum (Absaraka, ND) as well as recreational park and/or city plantings in Dickinson, Bismarck, Minot and Williston ND. Increasing plant diversity is critical with the threat of disease and insects impacting many of the current utilized woody plant species. This research project would assist in provided key woody plant selection information to city foresters, conservation organizations as well as local nurseries, contractors and residents within the Western ND region. Duration of project will be four years, starting in 2014 and continuing through and including 2017.

**Amount of Grant request \$633,236**

**Total Project Costs \$873,494**

(Note that in-kind and indirect costs can be used for matching funds)

**Amount of Matching Funds \$240,258**

**Source(s) of Matching Funds**

ND Agricultural Experiment Station (NDAES) and North Dakota State University (NDSU)

**Certifications**

X I certify that this application has been made with the support of the governing body and chief executive of my organization.

X I certify that if awarded grant funding none of the funding will be used for any of the exemptions noted on Page 1 of this application.

**Narrative****Organization Information**

North Dakota State University first opened as a public land grant institution in Fargo, North Dakota, in 1890, shortly after North Dakota officially became a state in November 1889. Initially known as the North Dakota Agricultural College, the college's name was changed to North Dakota State University in 1960. The North Dakota Agricultural Experiment Station and NDSU Extension Service are integral parts of the University. NDSU accepted its first graduate students in 1895.

NDSU has enjoyed steady growth, with enrollment now exceeding 14,500 students and over 700 faculty members. NDSU offers over 100 undergraduate and approximately 100 graduate programs in a wide variety of fields, with degrees awarded at the doctoral, master's, professional, and baccalaureate levels. In addition to their academic studies, students have opportunities to participate in approximately 300 student organizations, leadership development, civic engagement activities, fine arts, athletics, and study abroad.

NDSU is part of the North Dakota University System (NDUS), which includes 11 campuses across the state. The State Board of Higher Education (SBHE) is the policy-setting and governing body for the NDUS. The SBHE is made up of seven citizen members appointed to four-year terms by the governor, one student appointed by the governor to serve a one-year term, a non-voting faculty advisor and a non-voting staff advisor. NDSU is headed by a President, with a Provost who provides administrative leadership for all academic activities, including eight academic colleges and the graduate school.

NDSU's mission statement: "With energy and momentum, North Dakota State University addresses the needs and aspirations of people in a changing world by building on our land-grant foundation." With its land-grant mission to provide quality education, leading-edge research and excellent service, NDSU is acknowledged as a national leader among its peers.

### **Purpose of Grant**

North Dakota is a diverse intercontinental environment with limited woody plant species that have been evaluated for use in USDA hardiness zones 3 – 4. Dr. Dale E. Herman developed the North Dakota State University Woody Plant Improvement Program in the early 1970's. Over the years, this project has introduced 51 superior woody plants for production and sale with increased disease tolerance and winter hardiness for landscapes throughout North Dakota (limited release list can be found at <http://ndsuresearchfoundation.org/horticulture>). This program has been essential in assisting city foresters across ND in the selection of trees and shrubs suitable for use in recreational parks, city boulevards, as well as residential plantings. Several years ago the NDSU Woody Plant Improvement Program conducted an 'all-state' planting trial similar to this proposed activity. It ran from 1987 to 2007. It involved the planting and evaluation of woody plants (trees and shrubs) in numerous locations across ND including Absaraka, Bismarck, Carrington, Dickinson, Fargo, Grand Forks, Langdon, Minot, and Williston. This project has provided valuable information on new species and clonal selections that are suitable for the state of ND and more importantly for the specific tested location within the state based on various environmental conditions. This project was ended primarily as a result of lack of funding to support multiple evaluation sites, travel for data collection and maintenance. There has been a great desire to reinstate this project, especially in Western ND because of the population increase. Currently available nursery stock is being shipped and utilized in Western ND with limited growth evaluation based on soil and environmental conditions. Currently there is limited research being conducted in Western ND on increasing plant diversity for park, city and residential use. Plant material evaluation has fallen on the shoulders of the city foresters and park departments who are responsible for the city boulevards and recreational park space. This is a burden to them with limited time for such activities.

This proposed project will be a continuation and expansion of the current NDSU Woody Plant Improvement Program to evaluate potential woody plant species for use in recreational park applications. Objectives of this project include: 1. Identifying sources of woody plant germplasm with potentially desirable traits, 2. Evaluate accessions of new or untested species to determine establishment, winter and drought hardiness, soil adaptation, pest susceptibility, aesthetic characteristics and survival, 3. Establish practical means of propagating selected woody plants along with rootstock grafting trials, and 4. Evaluate recreational park and/or city plantings of candidate species and/or cultivars in Western North Dakota including Bismarck, Dickinson, Minot and Williston, ND.

In the Northern Great Plains and specifically in North Dakota, there is a limitation on the diversity of tree and shrub species that survive and thrive within the state. There are also many disease and pest issues related to many of the urban and landscape tree and shrub 'standards' such as Dutch Elm Disease (DED) (infests American Elm species, confirmed in ND), the threat of Emerald Ash Borer (EAB) (infests Ash species, confirmed in MN), Spruce Needle Cast disease (infests Colorado Blue Spruce and Black Hills Spruce, confirmed in ND) and now the threat of Asian Longhorned Beetle (confirmed in MN). Asian Longhorned Beetle poses a high level threat to many key

species used in ND recreational parks including Ash, Birch, Poplar, Hackberry, Elm, Maple, Willow and Mountain Ash. Woody plant evaluations will be critical to increase the diversity of suitable species that will not be affected by DED, spruce needle cast, EAB and ALB. Research including evaluations of tree and shrub species is critical to determine and select species that are tolerant of the growing conditions (climate and soil) as well as disease/pest resistance while coupled with desirable aesthetic qualities. Increased plant diversity is critical to assist with disease and insect issues that are threatening the current plantings.

Species evaluation selection will include input from the North Dakota Nursery and Greenhouse Association (NDNGA) and the North Dakota Urban & Community Forestry Association (NDUCFA). Research on propagation will be conducted along with evaluations so that nursery growers will have the necessary propagation information along with species recommendations and proper rootstock selection. Propagation research will focus on various methods including but not limited to shoot cuttings, tissue culture and grafting. These various methods will be compared with each other to determine the best practice for each species if applicable. Many species are typically grafted, involving taking a portion of the desired plant (stem segment) and placing it into a rootstock. Many of the rootstocks that are utilized for propagation are from species that are not suitable for use in ND with respect to hardiness and soil conditions (type and pH). For example, an outstanding oak selection, Prairie Stature<sup>®</sup> Hybrid Oak (*Quercus x bimundorum* 'Midwest'), from the NDSU Woody Plant Improvement Program is commercial grafted in Oregon on English Oak (*Quercus robur*), which is not hardy in USDA winter hardiness zone 3 or 4. This selection would be better produced on a Bur Oak (*Quercus macrocarpa*) rootstock, which is hardy to zone 3. Also by comparing rootstocks and other methods of propagation, plant material can be produced that will potentially increase the survivability of the different species.

Participants would include four city partners (Bismarck – Greg Smith, Bismarck Parks and Recreation District Operations Director; Dickinson – Koduah Owusu, City Forester; Minot – Brian Johnson, City Forester; Williston – Bruce Johnson, City Forester) as well as the ND Agriculture Experiment Station (NDAES) – Williston Research Extension Center (REC) and NDSU Dale E. Herman Research Arboretum. Large-scale plant trials will be conducted at the NDAES – Williston REC and the NDSU Dale E. Herman Research Arboretum located near Absaraka ND. The two sites, NDAES – Williston REC and the NDSU Dale E. Herman Research Arboretum, will provide a comparison of Eastern ND climate/soils to Western ND climate/soils as well as hardiness differences. These two locations will be utilized for more control plantings of material as well as space for larger plantings for rootstock trials, which is limited in city plantings (recreational park or city boulevard). Several potential suitable species will be placed on multiple rootstocks for evaluation and planted out for long-term evaluation. Data will be collected on rootstock compatibility as well as growth characteristics. Specific woody plant cultivar evaluations will be conducted in Williston, Minot, Dickinson, and Bismarck ND within recreational park and/or city plantings with replicated plantings located at NDAES – Williston REC and the NDSU Dale E. Herman Research Arboretum. With a minimum of 20 different woody accessions of species/cultivars (trees and shrubs)

planted per year for evaluation with a minimum replication of six plants per location. Graduate and undergraduate students will be involved in planting, data collection and analysis and will be involved in developing propagation protocols (cuttings, tissue culture, or grafting) at NDSU (Fargo) and the NDSU Dale E. Herman Research Arboretum. Data will be collected on establishment, growth rates, condition and health, evaluation for disease and insect damage, labor requirements with respect to pruning and training which will all be essential factors for species and/or cultivar success in the program.

Dr. Jerry Bergman, NDAES – Williston REC Director, stated that this research and project is very timely and much needed for Western North Dakota with the population expansion. Bruce Johnson, Williston City Forester, commented that he recently stopped by one of the newly planted residential parks developed by contractors had only ash trees planted with no other species present with plant materials coming in from Oregon and Idaho. Greg Smith, Bismarck Parks and Recreations Operations Director, mentioned that species selection and planting trials are of great importance to Bismarck and currently are being conducted and is very interested in further evaluation with this proposal.

Information will be presented at various field days, community presentations as well as at future meetings of the NDNGA and NDUCFA. This will allow the proper dissemination of information to key benefactors including conservations groups and other community officials in Western ND and the state.

The potential impact of this project would enhance, diversify and increase the inventory of usable landscape plants for USDA hardiness zones 3 – 4, specifically for Western ND for recreational park, conservation, commercial and residential use. Currently, there is limited woody plant improvement research being conducted for USDA hardiness zones 3 – 4 with the NDSU program being a major research entity in the region. The current impact of the NDSU Woody Plant Improvement Program is with the 51 introductions being propagated for sale by commercial wholesale firms in three countries; Australia, Canada and the United States (14 states, including 35 nurseries). Increasing woody plant species for use in recreational park applications would have a significant impact on residents specifically in Western ND and through out the region. City foresters, conservation groups as well as landscape contractors and local residents could utilize woody plants that are determined to be well suited for Western ND. Potentially there could also be a positive financial impact to the commercial nursery industry growing woody plants in ND by providing new plant materials that has been selected and evaluated for the Northern Great Plains. Providing new information on propagation of selected species will have a significant impact on the nursery industry within the state and region. Research will potentially assist in providing methods to assist with proper rootstock selection or reduce the need for grafting and potentially increase woody plant survivability and longevity. This research will ultimately increase the biodiversity of known suitable species for specific use in Western ND as well as the potential use for the entire state. This project will have a significant impact on increasing the standard of living for residents in Western ND as well as the entire state.

Project Activity	Who	Timeline
Plant lists will be generated in conjunction with input from NDNGA and NDUCEFA.	Dr. Todd P. West	Winter 2014
Plants will be planted at the five sites (NDAES – Williston REC, NDSU Dale E. Herman Research Arboretum, Williston, Minot, Dickinson and Bismarck, ND)	Dr. Todd P. West, Research Technician, Graduate Student, Hourly employees, city foresters	Spring 2014, Spring 2015, Spring 2016, Spring 2017
Propagation evaluations will be conducted.	Research Technician, Graduate Student	Various times during 2014, 2015, 2016
Data will be collected on establishment, winter and drought hardiness, soil adaptation, pest susceptibility, aesthetic characteristics and survival	Research Technician, Graduate Student and Hourly employees	2 times per year (May and October)
Presentations (including research field days) of findings to various groups including but not limited to conservation groups, city officials and community members, NDNGA and NDUCEFA annual meetings.	Dr. Todd P. West, Research Technician, Graduate Student	Various times during 2017

### **Management of Project**

The Director of the NDSU Woody Plant Improvement Program, Dr. Todd P. West, will be primarily responsible for this project as project leader and principal investigator to ensure that proper that the project is carried out in schedule and that objectives are achieved. He will coordinate the execution of this project with all participants, including the NDAES – Williston REC and city foresters. Meetings will be scheduled with the NDNGA and NDUCEFA to determine suitable woody plant material for evaluation. Meeting will also be scheduled with the various city foresters responsible for recreational park plantings at the different evaluation locations.

### **Evaluation – Describe your plan to document progress and results.**

The Director of the NDSU Woody Plant Improvement Program, Dr. Todd P. West, will be primarily responsible for ensuring that all necessary reporting will be completed. He will also ensure that evaluated data is properly reported to supported city officials, conservations groups, nursery production industry, contractors and ND residents through onsite field day visits as well as presentations at annual NDNGA and NDUCEFA meetings. Reports of yearly progress and outcomes of each species and cultivar will be made available through NDSU, NDNGA and NDUCEFA.



Success of this project will be dependent on developing a new list of suitable species or cultivars of woody plant species to be utilized for park and recreational plantings. This list will be a direct result of this research project for the evaluation of new woody plant species and cultivars that have potential in Western ND. Providing new information on utilization of selected species and cultivars will have a significant impact on the utilized plant diversity with respect to recreational parks within the state of ND.

## Financial Information

Project Expense	OHF Request	Applicant's Match Share (Cash)	Applicant's Match Share (In-Kind)	Applicant's Match Share (Indirect)	Other Project Sponsor's Share
Salaries	284,640	57,168			
Fringe Benefits	43,944	20,009			
Equipment = > \$5,000	6,000				
Travel	38,952				
Supplies	259,700				
Fees					
Publications					
Subawards					
Other Direct Costs					
Unrecovered Indirect Costs				163,081	
<b>Total Project Costs</b>	<b>633,236</b>	<b>77,177</b>	<b>0</b>	<b>163,081</b>	<b>0</b>

### Budget Narrative:

Project funding is requested for a total of 4 years, 2014 – 2017. Funds are requested for personnel, which include supplemental salary for a research technician at the NDAES – Williston REC, graduate student stipends, undergraduate students and associated fringe benefits. Funds are requested to support research and trial plantings at five locations: NDAES – Williston REC, NDSU Dale E. Herman Research Arboretum, Williston, Minot, Dickinson, and Bismarck ND. This funding request includes supplies for the planting as well as equipment (trailer to haul Bobcat Skid Steer – supplied by NDSU Woody Plant Improvement Program). Travel funds will include yearly travel to the six sites for planting as well as travel in 2017 for the presentation of information at various field days, community presentations as well as annual meetings of the NDNGA and NDUCFA.

Applicant's Match Share (Cash) for salaries includes 10% of Dr. Todd P. West (Principal Investigator) and Gregory Morgenson (NDSU Woody Plant Research Technician). Amount is entered for four year total.

Applicant's Match Share (Indirect) is 26% of total based on off-campus research.

Year 1 (2014)

Salaries

Staff Research Technician at NDAES – Williston REC	\$ 25,000
Fringe Benefits (35%)	\$ 8,750
Subtotal, Staff	\$ 33,750
Graduate Students x 2	\$ 34,000
Fringe Benefits (3.0%)	\$ 1,020
Subtotal, Graduate Students	\$ 35,020
Undergraduate Students x 2 (640 hours x \$9.50/hr)	\$ 12,160
Fringe Benefits (10.0%)	\$ 1,216
Subtotal, Undergraduate Students	\$ 13,376
Salary Subtotal	\$ 82,146

Equipment (>\$5000)

Trailer is needed to haul Bobcat Skid Steer to various sites to for planting	
Trailer	\$ 6,000
Equipment Subtotal	\$ 6,000

Travel

Travel to Evaluation Sites, 2 times/year, 1640 miles x \$0.71/mile	\$ 1,164
Hotels, 3 rooms x 14 nights/year @ \$105/night	\$ 4,410
Per Diem, 6 people x 14 days/year @ \$35/day	\$ 2,940
Travel Subtotal	\$ 8,514

Supplies

Plant Materials	
6 locations x 20 accessions x 6 reps/site = 720 plants/year	\$ 30,000
Staking Materials, Post and Straps, 2 posts/accession, \$10/post	\$ 12,000
Tree Trunk Protective Wrap, \$1.00/accession	\$ 600
Fencing, 6' Deer Browsing Guard	\$ 12,000
Treegator Slow Release Watering Bags	
City plantings only (360) @ \$20/bag	\$ 7,200
Propagation Supplies and Rootstocks	
Grafting and tissue culture miscellaneous supplies	\$ 2,000
Herbicide, Pre-emergent treatment for new plantings	\$ 500
Bobcat Skid Steer Auger Post Hole Digger	
To assist with digging holes for evaluations	\$ 2,500
Supplies Subtotal	\$ 66,800

Year 1 Subtotal \$163,460

Year 2 (2015)

Salaries

Staff Research Technician at NDAES – Williston REC \$ 25,000  
Fringe Benefits (35%) \$ 8,750  
Subtotal, Staff \$ 33,750

Graduate Students x 2 \$ 34,000  
Fringe Benefits (3.0%) \$ 1,020  
Subtotal, Graduate Students \$ 35,020

Undergraduate Students x 2 (640 hours x \$9.50/hr) \$ 12,160  
Fringe Benefits (10.0%) \$ 1,216  
Subtotal, Undergraduate Students \$ 13,376

Salary Subtotal \$ 82,146

Travel

Travel to Evaluation Sites, 2 times/year, 1640 miles x \$0.71/mile \$ 1,164  
Hotels, 3 rooms x 14 nights/year @ \$105/night \$ 4,410  
Per Diem, 6 people x 14 days/year @ \$35/day \$ 2,940

Travel Subtotal \$ 8,514

Supplies

Plant Materials  
6 locations x 20 accessions x 6 reps/site = 720 plants/year \$ 30,000  
Staking Materials, Post and Straps, 2 posts/accession, \$10/post \$ 12,000  
Tree Trunk Protective Wrap, \$1.00/accession \$ 600  
Fencing, 6' Deer Browsing Guard \$ 12,000  
Treegator Slow Release Watering Bags  
City plantings only (360) @ \$20/bag \$ 7,200  
Propagation Supplies and Rootstocks  
Grafting and tissue culture miscellaneous supplies \$ 2,000  
Herbicide, Pre-emergent treatment for new plantings \$ 500

Supplies Subtotal \$ 64,300

Year 2 Subtotal \$154,960

Year 3 (2016)

Salaries

Staff Research Technician at NDAES – Williston REC	\$ 25,000
Fringe Benefits (35%)	\$ 8,750
Subtotal, Staff	\$ 33,750
Graduate Students x 2	\$ 34,000
Fringe Benefits (3.0%)	\$ 1,020
Subtotal, Graduate Students	\$ 35,020
Undergraduate Students x 2 (640 hours x \$9.50/hr)	\$ 12,160
Fringe Benefits (10.0%)	\$ 1,216
Subtotal, Undergraduate Students	\$ 13,376
Salary Subtotal	\$ 82,146

Travel

Travel to Evaluation Sites, 2 times/year, 1640 miles x \$0.71/mile	\$ 1,164
Hotels, 3 rooms x 14 nights/year @ \$105/night	\$ 4,410
Per Diem, 6 people x 14 days/year @ \$35/day	\$ 2,940
Travel Subtotal	\$ 8,514

Supplies

Plant Materials	
6 locations x 20 accessions x 6 reps/site = 720 plants/year	\$ 30,000
Staking Materials, Post and Straps, 2 posts/accession, \$10/post	\$ 12,000
Tree Trunk Protective Wrap, \$1.00/accession	\$ 600
Fencing, 6' Deer Browsing Guard	\$ 12,000
Treegator Slow Release Watering Bags	
City plantings only (360) @ \$20/bag	\$ 7,200
Propagation Supplies and Rootstocks	
Grafting and tissue culture miscellaneous supplies	\$ 2,000
Herbicide, Pre-emergent treatment for new plantings	\$ 500
Supplies Subtotal	\$ 64,300

Year 3 Subtotal \$154,960

Year 4 (2017)

Salaries

Staff Research Technician at NDAES – Williston REC	\$ 25,000
Fringe Benefits (35%)	\$ 8,750
Subtotal, Staff	\$ 33,750
Graduate Students x 2	\$ 34,000
Fringe Benefits (3.0%)	\$ 1,020
Subtotal, Graduate Students	\$ 35,020
Undergraduate Students x 2 (640 hours x \$9.50/hr)	\$ 12,160
Fringe Benefits (10.0%)	\$ 1,216
Subtotal, Undergraduate Students	\$ 13,376
Salary Subtotal	\$ 82,146

Travel

Travel to Evaluation Sites, 2 times/year, 1640 miles x \$0.71/mile	\$ 1,164
Hotels, 3 rooms x 14 nights/year @ \$105/night	\$ 4,410
Per Diem, 6 people x 14 days/year @ \$35/day	\$ 2,940
Travel for city presentations for field days, community presentations	
3 trips to evaluation sites, 2460 miles x \$0.71/mile	\$ 1,746
Hotels during city presentations, 3 rooms x 6 nights @ \$105/night	\$ 1,890
Per Diem during city presentations, 6 people x 6 days @ \$35/day	\$ 1,260
Travel Subtotal	\$ 13,410

Supplies

Plant Materials	
6 locations x 20 accessions x 6 reps/site = 720 plants/year	\$ 30,000
Staking Materials, Post and Straps, 2 posts/accession, \$10/post	\$ 12,000
Tree Trunk Protective Wrap, \$1.00/accession	\$ 600
Fencing, 6' Deer Browsing Guard	\$ 12,000
Treegator Slow Release Watering Bags	
City plantings only (360) @ \$20/bag	\$ 7,200
Propagation Supplies and Rootstocks	
Grafting and tissue culture miscellaneous supplies	\$ 2,000
Herbicide, Pre-emergent treatment for new plantings	\$ 500
Supplies Subtotal	\$ 64,300

Year 4 Subtotal \$159,856

Project Total, 4 years (2014 – 2017) \$633,236

X I certify that a project budget will be sent to the Commission\*

### **Sustainability**

Portions of this research are shorter multi-year projects, which include the initial plantings as well as the propagation research. These objectives will be completed during the project funding duration period. With many woody plants, long-term evaluation is required, which has the potential for going beyond the project funding duration period. This long-term evaluation will be continued with the assistance from staff at the NDAES – Williston REC and NDSU Dale E. Herman Research Arboretum as well as the various city forestry departments.

### **Partial Funding**

If partial funding is available for this project it will have a significant impact on the capabilities of this project. This project would have to either reduce the number of plants evaluated or reduce the number of sites where evaluations occur. This would significantly compromise the overall project.

### **Scoring of Grants**

All applications will be scored by the Outdoor Heritage Fund Advisory Board after your ten-minute oral presentation. The ranking sheet(s) that will be used by the Board is available on the website at <http://www.nd.gov/ndic/outdoor-infopage.htm> .

### **Awarding of Grants**

All decisions on requests will be reported to applicants no later than 30 days after Industrial Commission consideration. Applicants whose proposals have been approved will receive a contract outlining the terms and conditions of the grant. Please note the appropriate sample contract for your organization on the website at <http://www.nd.gov/ndic/outdoor-infopage.htm> that set forth the general provisions that will be included in any contract issued by the North Dakota Industrial Commission. Please indicate if you can meet all the provisions of the sample contract. If there are provisions in that contract that your organization is unable to meet, please indicate below what those provisions would be. \*

### **Ownership of Work Product, Equipment and Materials**

Title to all inventions and discoveries made solely by Contractor inventors resulting from the Agreement shall reside in Contractor; title to all inventions and discoveries made solely by Commission inventors resulting from the Agreement shall reside in Commission; title to all inventions and discoveries made jointly by Contractor and Commission inventors resulting from the Agreement shall reside jointly in Contractor and Commission. Inventorship shall be determined in accordance with U.S. Patent Law.

### Compliance with Public Records Law

Contractor understands that, except for disclosures prohibited in this Agreement, the Commission must disclose to the public upon request any records it receives from the Contractor. Contractor further understands that any records that are obtained or generated by the Contractor under this Agreement, except for records that are confidential under this Agreement, may, under certain circumstances, be open to the public upon request under the North Dakota open records law. Contractor agrees to contact the Commission immediately upon receiving a request for information under the open records law and to comply with the Commission's instructions on how to respond to the request.

### **Responsibility of Recipient**

The recipient of any grant from the Industrial Commission must use the funds awarded for the specific purpose described in the grant application and in accordance with the contract. The recipient cannot use any of the funds for the purposes stated under Exemptions on the first page of this application.

If you have any questions about the application or have trouble submitting the application, please contact Karlene Fine at 701-328-3722 or [kfine@nd.gov](mailto:kfine@nd.gov)

**Subject:** RE: ND Outdoor Heritage Fund Grant Participation  
**Date:** Tuesday, November 26, 2013 12:05:27 PM Central Standard Time  
**From:** Bergman, Jerald  
**To:** West, Todd  
**CC:** Splichal, Kyla, Holloway, Kim

Todd,  
The Williston Research Extension Center is willing to participate.  
Jerry Bergman  
Director, WREC

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**From:** West, Todd  
**Sent:** Monday, November 25, 2013 3:48 PM  
**To:** Bergman, Jerald  
**Subject:** ND Outdoor Heritage Fund Grant Participation

Greg,

Thank you for your expressed interest in the proposal that I am putting together. Here is a brief overview.

Project Name: Selection and Evaluation of Ornamental Woody Plants Suitable for Parks, Recreational Areas and City Plantings for Western North Dakota

Overview: In the Northern Great Plains and specifically in North Dakota, there is a limitation on the diversity of tree and shrub species that survive and thrive within the state. There are numerous species that have not been evaluated and have potential for use in this climate. Many of the current U.S. nursery standards are not viable for this climate because of issues of hardiness as well as rootstock issues resulting from grafting. With the recent call for proposals from the ND Outdoor Heritage Fund, a project has come together to evaluate potential species and/or cultivars in Western North Dakota. There will be 6 sites included in this study, which include the ND Agriculture Research Experiment Station – Williston Research Extension Center, NDSU Dale E. Herman Research Arboretum, city plantings at Bismarck, Dickinson, Minot and Williston. This proposal is a four year planting study which will include evaluation for establishment and initial survival. Propagation techniques will also be incorporated with this project to evaluate different methods including cuttings, tissue culture and grafting. A grafted rootstock trial will be incorporated into this project as well to determine if different rootstock species can influence success of potential tree species in ND. This proposal is requesting funds for plant material and associated planting needs, including tree staking, Treegator water bags, and deer fencing for each tree. A minimum of 20 species and/or cultivars will be planted each year (total of 4 years) at the six different locations for evaluation. Funding is requested for all planting labor as well as data collection for evaluation. Information will be presented at various field days, community presentations as well as at future meetings of the NDNGA and NDUCEFA. This will allow the proper dissemination of information to key benefactors including conservations groups and other community officials in Western ND and the state.

If this is of interest to you, I am requesting that you write a letter (E-mail) of interest with respect to participation in this project. I am very excited about this project and hope that funding will be made available for this effort. I look forward to working with you and this project if funded.

If you have any questions please let me know. I need to have a letter of participation by Monday, Dec 2nd. Thank you for your time, especially on such short notice.

Sincerely,

Todd



Dr. Todd P. West  
Associate Professor of Horticulture  
Woody Plant Improvement Program Director  
Department of Plant Sciences  
**NORTH DAKOTA STATE UNIVERSITY**

266E Loftsgard Hall  
Dept 7670, PO Box 6050  
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Work: 701.231.6476  
Cell:701.429.4539  
Fax: 701.231.8474  
[todd.p.west@ndsu.edu](mailto:todd.p.west@ndsu.edu)

**Subject:** RE: ND Outdoor Heritage Fund Grant Participation  
**Date:** Monday, November 25, 2013 5:46:12 PM Central Standard Time  
**From:** Koduah Owusu  
**To:** West, Todd

Hi Dr. West, I am so excited about a program of research like this and thank you for including Dickinson in your proposal. I would like to participate in this project and make available any suitable selected site for potential species/cultivar evaluation. What do I need to include in the letter of participation?  
Koduah

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**From:** West, Todd [mailto:todd.p.west@ndsu.edu]  
**Sent:** Monday, November 25, 2013 2:47 PM  
**To:** Koduah Owusu  
**Subject:** ND Outdoor Heritage Fund Grant Participation

Koduah,

My name is Todd West and I am the director of the NDSU Woody Plant Improvement Program. I am drafting a grant proposal that focuses on the evaluation of woody plants for Western ND. I would really like it if you were interested in participating and allow us to trial plants in Dickinson. Here is a brief overview.

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Sincerely,

Todd

**Dr. Todd P. West**

Associate Professor of Horticulture  
Woody Plant Improvement Program Director  
Department of Plant Sciences  
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Fax: 701.231.8474  
[todd.p.west@ndsu.edu](mailto:todd.p.west@ndsu.edu)

**Subject:** Re: ND Outdoor Heritage Fund Grant Participation  
**Date:** Tuesday, November 26, 2013 8:17:12 AM Central Standard Time  
**From:** forestry@srt.com  
**To:** West, Todd

Good morning Todd:

Brian Johnson, the Minot City Forester, ask me to email you back, and let you know we are interested in participating in your planting study. Just let us know how we can help. Thanks for considering Minot!

Nancy Underwood  
Minot Forestry Department  
Secretary  
701-857-4178

**From:** West, Todd  
**Sent:** Monday, November 25, 2013 4:05 PM  
**To:** forestry@srt.com  
**Subject:** ND Outdoor Heritage Fund Grant Participation

Brian,

Thank you for your expressed interest in the proposal that I am putting together. Here is a brief overview.

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Sincerely,

Todd

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Work: 701.231.6476  
Cell: 701.429.4539  
Fax: 701.231.8474  
todd.n.west@ndsu.edu

**Subject:** RE: ND Outdoor Heritage Fund Grant Participation  
**Date:** Monday, November 25, 2013 4:07:11 PM Central Standard Time  
**From:** Greg Smith  
**To:** West, Todd

Todd,

The Bismarck Parks & Recreation District (BPRD) fully supports the efforts of North Dakota State University in regard to expanding the list of tree species and cultivars capable of surviving and/or thriving in the state.

We at BPRD would provide space on lands owned or managed by us for tree plantings as outlined in your description below.

Thanks for considering us a potential partner in this endeavor.

Please contact me with any questions you may have regarding this issue.

Greg Smith  
Operations Director  
Bismarck Parks & Recreation District  
(701) 222-6464 \m/ 13

**From:** West, Todd [mailto:todd.p.west@ndsu.edu]  
**Sent:** Monday, November 25, 2013 3:44 PM  
**To:** Greg Smith  
**Subject:** ND Outdoor Heritage Fund Grant Participation

Greg,

Thank you for your expressed interest in the proposal that I am putting together. Here is a brief overview.

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**Subject:** RE: Grant Support Email

**Date:** Wednesday, November 27, 2013 8:13:28 AM Central Standard Time

**From:** Bruce Johnson

**To:** West, Todd

Todd,

The community of Williston (the city of Williston, the city cemeteries and the Williston Park District) would be very interested in participating in this worthwhile endeavor. With the new growth in Williston, there are many areas that would benefit from this type of study. Thank you for including us in your proposal. If you are able, we would like to know more information about the grant and tree/shrub species that will be utilized.

Bruce Johnson  
Mike Bearce  
City Forestry Dept.

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**From:** West, Todd [mailto:[todd.p.west@ndsu.edu](mailto:todd.p.west@ndsu.edu)]

**Sent:** Tuesday, November 26, 2013 11:51 AM

**To:** Bergman, Jerald; Koduah.Owusu@dickinsongov.com; Bruce Johnson

**Subject:** Grant Support Email

Hi,

Please review the email that I sent yesterday and respond via email if you are able to support this grant proposal. Thank you all for your time. This proposal has to be sent out on Monday, Dec 2. Thanks.

Sincerely,

Todd

Dr. Todd P. West  
Associate Professor of Horticulture  
Woody Plant Improvement Program Director  
Department of Plant Sciences  
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