

ML 2018 Project Abstract

For the Period Ending June 30, 2023

PROJECT TITLE: Detecting hybrid barberry and investigating its role in rust epidemiology

PROJECT MANAGER: Pablo Olivera Firpo

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FUNDING SOURCE: Environment and Natural Resources Trust Fund

LEGAL CITATION:

ML 2018, Ch 214, Sec. 4, Subd 6a

APPROPRIATION AMOUNT: \$206,783

AMOUNT SPENT: \$206,783

AMOUNT REMAINING: \$0

Sound bite of Project Outcomes and Results

A protocol for quality DNA extraction of barberry tissue and a set of 33 cost-effective PACE markers were developed that can be adopted for laboratory hybrid barberry identification.

Overall Project Outcome and Results

Common barberry and Japanese barberry are both terrestrial invasive species that have spread throughout the United States including Minnesota. These species also readily hybridize, resulting in *Berberis x ottawensis*, another species which can host cereal rust diseases that threaten wheat and small grain production. Researchers know that this hybrid is present in Minnesota, but accurate identification is difficult, and a definitive survey has never been conducted. Doing so is important to assess the threat it poses to both agricultural systems and forest health.

Principal investigator Firpo and team developed a protocol to accurately detect the parental and hybrid alleles enabling accurate identification of hybrid barberry. It can be adopted by any standard laboratory. Using the identification protocol, the researchers confirmed the presence of hybrid barberries in Minnesota. Over the span of two years, they collected plant samples of hybrid barberry with rust and found necrotic spots on some samples, infected by *Puccinia striiformis f. sp. poae* (stripe rust of Kentucky bluegrass). This suggests hybrid barberries may be susceptible to stem rust.

Project Results Use and Dissemination

Multiple public presentations were made at research and academic meetings and conferences. A full listing may be found on the MITPPC [webpage](#) dedicated to this research project. Federal partners helped to elevate this research line to the national level with other funds given its potential role in cereal grain production.