

14th Biennial Short Rotation Woody Crops International Conference

The Future is Green:

Integrating Short Rotation Woody Crops (SRWCs),
Agroforestry, and Ecosystem Services for
Sustainable, Productive Landscapes

University of Missouri
Columbia, Missouri, USA
May 13-16, 2024



Center for Agroforestry
University of Missouri



- 1300-1415 Technical Session: Genetics and Physiology** (Conservation Hall)
Moderators: Courtney Siegert, Jiaxin Wang
- 1300-1315 Growth and Biomass of Poplar Seedlings Grown from Geographically Different Seeds in Mongolia
Batdorj Enkhbayar, Mongolian Academy of Sciences
- 1315-1330 Elevated CO₂ Sensitizes *Populus* Response to Rising Temperatures: Provenance, Nitrogen, and Leaf Traits
Jiaxin Wang, Mississippi State University
- 1330-1345 Dehydration Tolerance of Black Cottonwood (*Populus trichocarpa*) for Sustainable Biomass Production
Timothy Tschaplinski, Oak Ridge National Laboratory
- 1345-1400 Bark Morphological and Chemical Features are Differentially Correlated with Disease Resistance and Yield in Hybrid Poplar Taxa
Priya Voothuluru, University of Tennessee
- 1400-1415 Suitability of Veneer Poplar on *Phytophthora*-Infested Sites in Western North Carolina
William Kohlway, North Carolina State University
- 1415-1515 Poster Session, Afternoon Break** (ABNR Lobby and Reading Room)
- 1515-1630 Technical Session: Large Initiatives** (Conservation Hall)
Moderators: John Kort, Carlos Rivera
- 1515-1530 Research and Development of Fast-Growing Trees in the United States from 2020 to 2023: A Report from the International Commission on Poplars and Other Fast-Growing Trees Sustaining People and the Environment (IPC) of the Food and Agriculture Organization of the United Nations (UN FAO))
Ron Zalesny, USDA Forest Service
- 1530-1545 Review of Poplar and Willow Activities in Canada
John Kort, Poplar and Willow Council of Canada
- 1545-1600 Eight Case Histories Where the Salicaceae Successfully Manages Pollutants
Louis Licht, Ecolotree Inc.
- 1600-1615 Overview of DOE BETO Purpose-Grown Energy Crops
Dana Mitchell, US Department of Energy
- 1615-1630 From Controlled Crossings to Commercial Sales: A Brief History of the Poplar Breeding Program at University of Minnesota Duluth NRRI and Future Perspectives
Andrej Pilipovic, University of Minnesota Duluth - Natural Resources Research Institute
- 1630-1730 Conference Closing Session** (Conservation Hall)
- 1715-1915 Van shuttle from Anheuser-Busch Natural Resources Building to Hampton Inn & Suites** (Van will make a loop between locations)
- 1730-1830 Short Rotation Woody Crops Operation Working Group Meeting** (ABNR 123)
- 1830- Student Group Dinner or Dinner on Your Own**

Growth and Biomass of Poplar Seedlings Grown from Geographically Different Seeds in Mongolia

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This study assesses the distribution and characteristics of native poplar species in Mongolia. About 8.2% (12.4 million ha) of the total territory of Mongolia is covered with forests, which is mostly boreal forests dominated by coniferous species. Poplars and aspen occupy less than 1% of forests. Currently there are 5 native species of *Populus* recorded in Mongolia, including aspen (*Populus tremula* L.) and desert poplar (*P. euphratica* Olivier), which grow in lower mountains and desert, respectively. The other species mostly grow along the riparian zone: *P. laurifolia* Ledeb., *P. suaveolens* Fisch. ex Poit. & A.Vilm., and *P. pilosa* Rehder. There have not been many studies on the native poplars in Mongolia, and in this study, we determined the natural distribution of two main species, and collected their seeds to test seedlings for the growth difference to define the superior characteristics to use for restoration of degraded riparian forest, which has high adaptation potential.

We collected *P. suaveolens* seeds from Onon, Selenge, and Terelj Rivers, and *P. laurifolia* seeds from Khovd, Tamir, Tes, and Bulgan Rivers and Zuunsaikhan Mountain. Seeds were planted in the nursery in open soil and pots. Seedlings were studied for their growth parameters, and specific leaf areas. Growth and biomass of these seedlings differed (p-value<0.001), and superior growth was observed for the seedlings collected from Selenge River Basin. Further, seedlings were transferred to the field at two years old. Growth parameters and biomass were studied for the destructively sampled 40 seedlings.

Results from this study showed that the tree diameter distribution curve is different from normal forest according to A.V. Turin's scale. This indicates natural growth balance is lost. We conclude that riparian forests are over exploited for recreation, firewood, and livestock grazing, and therefore need to be restored with the seedlings grown from native species to continue providing ecosystem services and energy for local communities.

Keywords: distribution, specific leaf area, *P. suaveolens*, *P. laurifolia*