

## A NEW ERA FOR THE HARDWOOD TREE IMPROVEMENT AND REGENERATION CENTER

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The Hardwood Tree Improvement and Regeneration Center (HTIRC) was initiated in 1999 as a national center for research, development and technology transfer for hardwood stewardship. Black walnut (*Juglans nigra*) was selected as the central hardwood flagship species due to its high timber value and veneer markets that continue to drive demand for quality planting stock in the region. Seed orchards at Indiana Division of Forestry's Vallonia State Nursery, developed in cooperation with the HTIRC, produce select black walnut seedlings with improvements for straightness and volume. We have also conducted research and made selections in other species including northern red oak (*Quercus rubra*), black cherry (*Prunus serotina*), and white oak (*Q. alba*). The HTIRC has established an extensive clone bank of butternut (*J. cinerea*) to aid in development of resistance to butternut canker, a devastating pathogen, to facilitate its restoration. We have cooperated with other USDA Forest Service Northern Research Station units to establish seed orchards with improved resistance to beech bark disease. Additionally, field trials of American chestnut (*Castanea dentata*) have been established in collaboration with the The American Chestnut Foundation (TACF), and refined nursery propagation and grafting techniques have been developed for *Juglans* spp.

Tree improvement efforts in the central hardwood region face many obstacles. For one, silvicultural systems are dominated by uneven-aged management which has led to dual emphases on increasing genetic diversity and improving highly heritable traits, such as stem form, in lieu of volume. In recent years, the region has experienced numerous invasions of exotic insects, diseases and plants along with a burgeoning white tailed deer population requiring exclosure of small trees. Further, demand for hardwood seedlings vacillates with availability of government cost-sharing programs, and wanes with surging crop prices that drive landowner decisions to farm rather than reforest newly planted acres.

In January 2017, Dr. Mark Coggeshall replaced Dr. Charles Michler, founding HTIRC project leader. In addition, Dr. Robert Wagner was hired in 2016 as the new Head of Purdue University's Forestry and Natural Resources (FNR) Department, where the HTIRC is located. A new strategic plan, developed by scientists from the US Forest Service and Purdue, identifies three programmatic themes for hardwood systems: tree improvement, management and threats. We are looking for new partners and collaborators as we aim to expand the program's scope to other parts of the region. We invite your interest and collaboration. Please visit our website at <https://htirc.org/>.

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