

BUILDING A COMPREHENSIVE COLLECTION OF ASH GERMPLASM

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The U.S. National Plant Germplasm System (NPGS) has conserved seed collections of ash (*Fraxinus*) germplasm at the USDA-ARS North Central Regional Plant Introduction Station (NCRPIS) in Ames, IA, since the 1970s. The initial focus was on samples acquired from Yugoslavia but gradually expanded to include representation from other areas, including North America. At the time emerald ash borer (EAB) (*Agrilus planipennis*) was introduced into southeastern Michigan, the NCRPIS maintained a relatively small ash germplasm collection that did not encompass the range of taxonomic and genetic variation in North American species vulnerable to EAB, nor in Asian species that co-evolved with EAB. In the current NCRPIS Project Plan, this gap in the collection was recognized and plans made to address it.

As plans were refined, it became clear that proper sampling of North American and Asian ash would require a multi-institutional, collaborative effort. Fortunately, efforts were already underway within the USDA-NRCS (at the Plant Materials Center in Rose Lake, MI), the U.S. Forest Service National Seed Laboratory, and other public and tribal organizations to mobilize collection in North America. Collaborations were quickly established involving the Morton Arboretum and Beijing Botanical Garden, supported by the USDA-ARS Plant Exchange Office, to collect ash seeds in China. The NPGS recognized the value in bringing together

the seed collections made by these organizations for long-term preservation at the National Center for Genetic Resources Preservation (NCGRP) in Fort Collins, CO, and for the selective integration of those collections into the ash working collection, actively curated at the NCRPIS.

In January 2009, a meeting and teleconference was held in Annapolis, MD, bringing together as many parties as possible involved with ash seed collection to develop standard collection and documentation protocols and a comprehensive plan for North America. The collection strategy centers on a stratified sampling of native populations of all North American *Fraxinus* species, based primarily on taxonomy and ecogeographic zones. This approach recognizes the urgency of collecting in regions being colonized by EAB. Since 2007, considerable progress has been made sampling native ash populations. The NCRPIS now conserves 237 accessions (78 percent of which are North American). Seed storage can also be complemented by cryogenic storage of dormant vegetative buds, with protocols recently developed in collaboration with NCGRP. Together, these efforts will create a publicly accessible, comprehensive ash germplasm collection that can serve as a foundation for research on EAB, *Fraxinus* genetics, and the eventual restoration of ash in our forests and communities.