

## Beech Seedlings Offer Hope for Tomorrow's Forests

### The Challenge:

Populations of American beech (*Fagus grandifolia*) are declining in much of the species' native range due to beech bark disease. The disease was first found in American beech in North America around 1932. Beech bark disease is a canker disease caused by the *Neonectria* fungus; feeding by the beech scale insect allows entry of the fungal pathogen into a tree. The scale insect inserts a stylet (needle-like mouthpart) through the bark and into the underlying live tissues, and sucks up sugars and other nutrients. The disease causes formation of cankers that can girdle and kill the tree.

Beech provides food and habitat for more than 40 species of birds and mammals. Many animals feed on beech nuts in fall and winter, including black bears, gray squirrels, chipmunks, turkeys, and deer. Trees begin to produce substantial numbers of nuts at about age 40. By age 60, large nut crops are produced every 2 to 8 years. This hard mast is especially important in northern forests where oak and hickory are rare.

### The Solution:

Personnel from the Monongahela National Forest identified potentially resistant beech trees across the forest during summer 2012. These trees were located where heavy mortality had once occurred—an area known as the aftermath zone. About 120 trees greater than 9 inches in diameter were identified and tested for resistance to beech bark disease. Testing involved placing scale eggs in direct contact with the bark of trees and providing an ideal environment for the insect to thrive. After 1 year, the trees were revisited to determine if the scale eggs hatched, fed, reproduced, and established a colony. If scales did not become established, then scion was collected from the test

*American beech is the only native species of the genus Fagus in North America. It is a slow-growing, common, deciduous tree that attains ages of 300 to 400 years.*



Personnel from West Virginia Department of Agriculture (WVDA) and U.S. Forest Service prepare to plant seedlings that are resistant to beech bark disease. (Photo: WVDA/Quentin Sayers. Used by permission.)

trees and sent to the U.S. Forest Service Research lab in Delaware, OH, to be grafted onto beech rootstock for planting.

### Resulting Benefits:

As of spring 2017, 88 potentially disease-resistant beech seedlings have been planted at the U.S. Forest Service's Timber and Watershed Laboratory in Parsons, WV. These seedlings will be monitored and managed with hopes they will provide a disease-resistant seed source that will restore American beech in West Virginia forests.

### Sharing Success:

This project provided an opportunity for all three branches of the U.S. Forest Service to work cooperatively with the West Virginia Department of Agriculture. Techniques used to locate and test potentially disease-resistant beech trees are being shared with other States, to assist them in establishing seed orchards of disease-resistant beech.

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**Forest Service**  
**Northeastern Area**  
**State and Private Forestry**

Kathleen Atkinson, Area Director  
 626 E. Wisconsin Ave.  
 Milwaukee, WI 53202  
 Phone: 414-297-3765  
 E-mail: [katkinson@fs.fed.us](mailto:katkinson@fs.fed.us)

Robert Lueckel, Field Representative  
 180 Canfield Street  
 Morgantown, WV 26505  
 Phone: 304-285-1503  
 E-mail: [rlueckel@fs.fed.us](mailto:rlueckel@fs.fed.us)

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