An American chestnut fruit. Photo by: Paul Wray, Iowa State University.

Two Great Trees
By: Adam Downing, Virginia Cooperative Extension

Two old forest friends are making a comeback after years of both gradual and rapid demise. They are the American chestnut and American elm. These two species almost disappeared from our forest and street tree scene because of pathogenic fungi introduced from Europe years ago. The American chestnut met its fate through the chestnut blight introduced in 1904 and the American elm succumbed to the Dutch elm fungus introduced in the 1930's. However, a glimmer of hope is growing stronger for these former stalwarts as long-term research efforts are beginning to reach fruition.

Even though the American chestnut nearly vanished by the late 1930's, many trees retained their ability to sprout from the root collar area where some life still existed. Nevertheless, once these new sprouts reached large sapling size, the blight, still present in the soil, attacked again, rendering this re-growth a fatal blow. New sprouts and ultimate death occurred time and again until the root stock lost all viability. Individual and widely scattered chestnut trees, however, still exist within their former growing area — some even showing an ability to resist the blight more readily than others.

Flowers selected from these trees are being cross-pollinated with blight resistant species of Asiatic chestnut in a wide variety of research efforts. Foremost in many of these efforts are projects sponsored and conducted by the American Chestnut Foundation. When the hybrid trees produced reach flowering stage, they are then back-crossed with selected American chestnut trees in a series of long-term experiments. Back-crossing is a procedure whereby hybrids are crossed with one of the original hybrid parents (in this case one of the American chestnut parents) to ultimately produce a hybrid exhibiting strong American chestnut traits. These new hybrids are then inoculated with blight fungus to determine resistance qualities.

On-going research is developing hybrids with the form of American chestnut and the disease resistance of Asiatic chestnut. Photo by: Joseph O'Brien, USDA Forest Service.

Positive results are gradually coming forth from these experiments. There is a reasonable expectation that the American chestnut may be back as a ruling member of Virginia's mountains and foothills for the next generation.

Regarding the American elm, death has been more complete for individual trees because of the virulent effect Dutch elm disease (DED) has on the elm's water-conducting cells, killing all vascular tissue (roots included). But not all trees have succumbed. Since inception of DED, elms displaying resistance have been sought throughout their natural growing area. Cuttings have been taken from those showing promise and then propagated. The trees propagated from the cuttings were inoculated with DED to study their inherent resistance. Many of these studies have been undertaken at various universities and at the National Arboretum.

The American elm is loved for its graceful form and was widely planted as a street tree. Photo by: Joseph O'Brien, USDA Forest Service.

Results from these various experiments have produced multiple American elm cultivated varieties (cultivars) displaying DED resistance. There are many different cultivars available through mail-order or local nurseries. According to research at the Bartlett Tree Research Laboratories, the best true American elms, in terms of tolerance to DED and form, are the Princeton and the new Jefferson American elm from the Washington mall.

Elm cultivars resulting from a series of crossings of American elms with different Asiatic elms, which are naturally resistant to DED, have produced many options. The two best in terms of resembling the American are the Accolade and Triumph which are also available from selected Virginia-based nurseries.

Thanks to science and the dedication of growers, these two important trees have hope of once again gracing our woodlands and urban forests. You can be part of the comeback by planting an American elm today and supporting the work of The American Chestnut Society in hopes of one day planting an American chestnut.

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