Evaluating Stool Layering For Producing Own-Rooted Clones of Northern Red Oak And White Ash

Philip A. O'Connor

Indiana Department of Natural Resources, Division of Forestry, Vallonia State Nursery, P.O. Box 218, Vallonia, IN 47281

treeimp@hsonline.net

Northern Red Oak has historically been hard to vegetatively propagate by rooted cuttings. Superior selections have been established in our seed production orchards by grafting onto nursery run seedling rootstock. This method of propagation has been problematic due to delayed onset of graft incompatibility. After eight to ten years, approximately 60% of the grafts have failed. The incompatibility has been attributed to either of two potential causes:

- insufficient lignification in the graft zone caused by dissimilar isomers of cambial peroxidase enzyme between the scion and the root, or
- a viral infection of the same type that causes "Black Line" in Persian walnuts

White Ash propagation exhibits other potential problems. Selections of white ash based on superior phenotypic characteristics may contain scionwood that is infected with the Ash Yellows mycoplasm, but is asymptomatic for the disease. Immunity or tolerance to this disease is a trait we would like to introduce into our seed orchard. In grafting, however, it may be possible to infect the rootstock with the virus causing the loss of the clone.

In order to solve these problems, a program of stool layering is being considered. In both cases, the failure of the grafted clone is a gradual process allowing survival for several years at least. This would appear to make these species ideal candidates for propagation through stool layering.

The current study uses nursery run seedlings to evaluate several stool layering treatment protocols to determine which will be most effective in producing own-rooted clones for each species. Seedlings of both species were grown for one season at close spacing, and pruned to 5 centimeters while dormant. The cut seedlings were then subjected to 4 replications of 3 treatments, and an untreated control. The treatments involved mounding with moist sawdust at various growth stages from complete dormancy through >10 centimeters of shoot extension.