Section 3 Abstracts: Chestnut Tree Breeding, Propagation and Physiology

Time Saving Advances in Breeding for the Restoration of the Chestnut. Larry Inman and Charles Burnham. The American Chestnut Foundation, Route 1, Danvers, MN 56231, USA

Time is a major consideration in breeding American chestnut. When compared with the annual field and garden crops there are advantages as well as disadvantages. With trees, it is possible to grow and observe the progeny and still have the original plant. Centuries would be required to repeat with forest trees the research that is the basis of our knowledge of genetics and breeding. The basic principles of genetics and breeding are the same for all species. They may be used as a basis for immediate decisions in tree breeding. With the available techniques for early testing, seedling chestnuts can be evaluated for resistance to chestnut blight in 5 yr. A graft-compatible dwarfing chestnut hybrid-rootstock is available. Seedlings grafted on this grow as bushes. They produce flowers with pollen the second year after the graft and nuts the third. This reduces the time required for the successive generations of backcross breeding. To be of value, a chestnut variety must be at least acceptable for many characteristics, including those that cannot be evaluated until an advanced stage of maturity. Except for the added characteristics backcross, varieties are the same as the recurrent parent. If the recurrent parent used for backcrossing is well adapted and acceptable for mature characteristics, the backcross yield is also likely to be acceptable without the necessity of years of testing in field trials.