

Section 3 Abstracts: Chestnut Tree Breeding, Propagation and Physiology

Increased Chestnut Blight Resistance in American Chestnut Trees Grown from Gamma-Irradiated Chestnut Seed. Dennis Fulbright,¹ William MacDonald² and Teri Keiser³. ¹Department of Botany and Plant Pathology, Michigan State University, East Lansing, MI 48224; ²Division of Plant and Soil Sciences, West Virginia University, Morgantown, WV 26506; and, ³The National Colonial Farm, The Accokeek Foundation, Accokeek, MD 20607, USA

Individual American chestnut trees, planted in orchards at the National Colonial Farm (NCF) and Sugarloaf Mountain (SM), Md., exhibit nonlethal cankers with excessive production of wound periderm and callus tissue when naturally infected by *Cryphonectria parasitica*. No hypovirulent *C. parasitica* isolates have been recovered from naturally occurring, nonlethal cankers on these trees. The orchards were established in the late 1960's in an experiment initiated by Ralph Singleton and Albert Dietz to create, through mutation breeding, American chestnut trees resistant to chestnut blight. To determine if increased resistance to chestnut blight can account for the nonlethal cankers, 24 stems representing eight trees at NCF and SM were inoculated with 5 isolates of *C. parasitica* including a known virulent strain, Ep 155. For controls, similar inoculations were performed on trees in a stand of nonirradiated American chestnut near Parsons, W. Va. The trees inoculated at NCF represent first generation irradiated trees while those at SM were from second generation irradiated germplasm. After 2 yr, trees at all three locations produced cankers with similar dimensions of external bark necrosis, but a significant portion of the necrotic bark on the irradiated trees (NCF & SM) was underlain by healthy bark tissues. These data indicate that several of the surviving trees at both NCF and SM may have increased levels of resistance to chestnut blight that may account for the appearance of the nonlethal cankers.