

## Section 4 Abstracts: Ecology and Genetics of the Chestnut Blight Fungus

**An Engineering Approach to Controlling Chestnut Blight with Hypovirulence.** Fred Hebard. The American Chestnut Foundation, Wagner Research Farm, Meadowview, VA 24361, USA

Hypovirulent (H) strains of *Endothia parasitica* can be applied to chestnut trees by spray methods to convert virulent strains that currently infect the tree and those that will subsequently infect it (Scibilia and Shain, Plant Disease 73:840). Using spray methods, it would be feasible to apply spores of H strains over large areas ( $>10^5$  hectare). There are several key questions. What to put in the spray? How often and when to spray? Scibilia and Shain's method could be used to determine what concentration of spores to use, what conversion compatibility groups to use, whether conversion compatibility groups and H agents should be mixed or applied separately, how often and when to spray, and what adjuvants to add to the spray mixture. The method also could indicate, partially, the type of H agent to use. These parameters could be determined in two or three seasons of experimentation. Then, small ( $<1$  hectare) plots could be established to determine parameters related to the establishment of populations of H strains. These include the rate of growth of chestnut trees and their density and size when treated, canopy structure, blight incidence, duration of treatment, and the type and mixture of H agents. Such experiments

would take 5 to 30 yr each. They would establish what degree of blight control is possible. It would be necessary to determine the frequency of the various vegetative or conversion compatibility groups in the fungus population before the experiments were started. Molecular biologists could assist such efforts by developing rapid, inexpensive methods of determining vegetative compatibility groups (using markers) and the occurrence of H agents (using probes) suitable for large sample numbers. It would be helpful also to classify the various H agents more rigorously.