a. Field Studies of ilypovirulence

a. Effect of hypovirulent Strains on Virulent Cankers

Two-year Control Results in Artificially Established Virulent Cankers with Compatible and Incompatible Hypovirulent Strains at Three Locations in West Virginia

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Eight virulent cankers were artificially established on each of 24 American chestnut trees in three areas of West Virginia. The inoculations were made 6 to 8 inches apart on each tree in July 1978, using eight different virulent strains of *Endothia parasitica*, The compatibility type of each strain was predetermined in the laboratory using the procedure of Anagnostakis. Cankers were challenged after 1 month, with either individual or mixed hypovirulent isolates. The challenge was accomplished by punching 0.5 cm holes every I to 2 cm around the entire margin of the canker and then introducing the appropriate hypovirulent inoculum. Water agar was used in place of hypovirulent inoculum in control (check) trees. The length and width of each canker were measured at the time of the challenge and then 3, 8, and 14 months after inoculation.

Laboratory tests, pairing virulent and hypovirulent strains of *Endothia parasitica* on an amended potato-dextrose agar, were used to determine compatible and incompatible virulent-hypovirulent combinations. The results of the laboratory and field tests were comparable. In every instance, when a hypovirulent isolate or mixture of isolates converted a virulent isolate in the laboratory, it controlled the same isolate in the field test. There were certain virulent isolates, however, that were controlled in the field but were not converted in laboratory tests. Thus, it appears that the physical make-up of the tree affords a greater opportunity for conversion to occur.