Pennsylvania Chestnut Blight Studies

Barry Towers and John Longenecker

Pennsylvania Department of Environmental Resources, Pennsylvania Department of Agriculture, Harrisburg, PA 17101

ABSTRACT.— In 1977, plot studies were initiated to determine if four hypovirulent strains of *Endothia parasitica* could be established in areas of natural chestnut regeneration in Pennsylvania. This article is a report on procedures used and results obtained to date.

In 1977, studies were undertaken to determine the potential for establishment and spread of hypovirulent (*H)Endothia parasitica* (Murr.) P. J. & H. W. And. in Pennsylvania. The study was divided into two parts. Part I is concerned with the inoculation of the (H) strain into existing cankers in areas of chestnut, *Castanea dentata* (Marsh) Borkh. regeneration followed by subsequent monitoring to determine infection and spread. Part II is concerned with the ability of the (H) strains used in Part I to infect and sporulate in healthy chestnut.

In order to meet the objective for Part I, 27 plots were located, having a minimum of 20 sprouts within 100-foot radius from a cankered tree (non girdled) greater than 1.0 in. diameter breast height (dbh). Each clump or sprout within the plot was located by both bearing and distance. Height to canker, dbh, and stem condition were recorded for each study tree.

In July, 1977, all plots were inoculated with 4 (H) strains (Ep 14, 43, 49, 90) received from the Connecticut Agricultural Experiment Station. At least four points on the canker margin were inoculated and cankers greater than 4 in. were inoculated every 2 to 3 in.

All sites will be revisited annually October to November, 1978-1983. Cankers will be examined for either callus formation or cessation of growth. If

Table 1

Fruiting body and canker formation on healthy chestnut trees following inoculation with four hypovirulent strains of *Endothia parasitica.*

Tree No.	Strains			
	(H) 14	(H) 43	(H) 49	(H) 90
1	35 x 37	—	—	—
2	callus	callus	—	—
3	35 x 16 (F)[a/]	27 x 20	—	—
4	20 x 18	60 x 55 (F)	—	—
5	65 x 46 (F)	28 x 25	callus (F)	—
6	—	—	—	—
7	—	—	—	—
8	—	(F)	—	—
9	25 x 20	83 x 87	—	—
10				
Avg.	20 x 14	22 x 29	—	—

[a] (F)—Indicates fruiting bodies formed.

either are noted, isolations and subsequent identifications will be made.

In Part II, nine trees were selected and in July, 1977, a 1/4 in. diameter bark plug was removed at heights of 2, 3, 4 and 5 feet on the south-facing side of each tree. Two mycelial plugs of strain 14 were aseptically inserted into the uppermost hole and covered with masking tape. Strain 43 was placed in the 4 ft. site, 49 in the 3 ft. site, and 90 in the 2 ft. site. The results are presented in Table 1. Strains 49 and 90 did not produce cankers when inoculated into healthy trees, while 43 and 14 did produce cankers and fruiting bodies. Strains 43 and 14 also appeared to slow canker development in another study.

It is important to note that, as of this time, we have not attempted to reisolate from the cankers induced by strains 43 and 14 to determine if they are the original hypovirulent strains we introduced or contaminants.