

PLANT DISEASE REPORT

Sara May, Plant Disease Clinic

Sample: Japanese Chestnut (*Castanea crenata*)

Sample Location: Erie County, PA

(Sample was collected and sent to the clinic from Erie County)



Chestnut Blight

One of the most notorious plant diseases in North America, chestnut blight became widespread after its introduction and wiped out most of the mature American Chestnut trees in the United States. Chinese and Japanese chestnuts have varying levels of resistance to the pathogen but are not immune to infection.

Chestnut blight is caused by the fungus *Cryphonectria parasitica* and was discovered in North America in 1904. The pathogen causes cankers on the trees that kill the bark, cambium, and sapwood of the twigs, branches, and trunk. The roots of the tree are not killed, which is why chestnuts primarily exist as understory sprouts in today's U.S. forests where they were once the dominant tree species.



Although the sample sent to the clinic was only this small piece of bark, it was easy to spot the orange pycnidial stromata.



After only a few days in a moist chamber, the yellowish conidia oozed in the form of tendrils from the pycnidia.

Symptoms appear as yellowish-brown cankers on the branches or trunk. The cankers can be slightly sunken or slightly swollen. As the cankers girdle the tree, the leaves turn yellow and brown. Within a few weeks after lesions are formed on the tree, the orange to yellowish-brown pycnidial stromata break through the surface of the killed bark or grow in the bark crevices. Conidia form in tendrils from the pycnidia when the bark is moist. Perithecia also form in the same stromata that the pycnidia were formed in, and the two fruiting structures can occur in one stroma at the same time. Perithecia eject ascospores after being moistened by rain.



C. parasitica in culture

In 1912 the Plant Quarantine Act was passed in the hopes of preventing another disaster similar to loss of the American Chestnut. An effective control for this disease has yet to be found. There has been some success with breeding for disease resistance. Also a hypovirulent strain of *C. parasitica* was found, which causes smaller cankers and does not kill the trees. The hypovirulent strains contain a virus, which makes the fungus less virulent. The virus can be passed to the virulent strain and this has been used, with limited success, as a biological control.