

Just prior to when the blight hit in 1904, there were an estimated 9 billion chestnut sprouts in the eastern United States, from Maine to Georgia; 25% of some forest canopies were composed of mature American chestnuts.

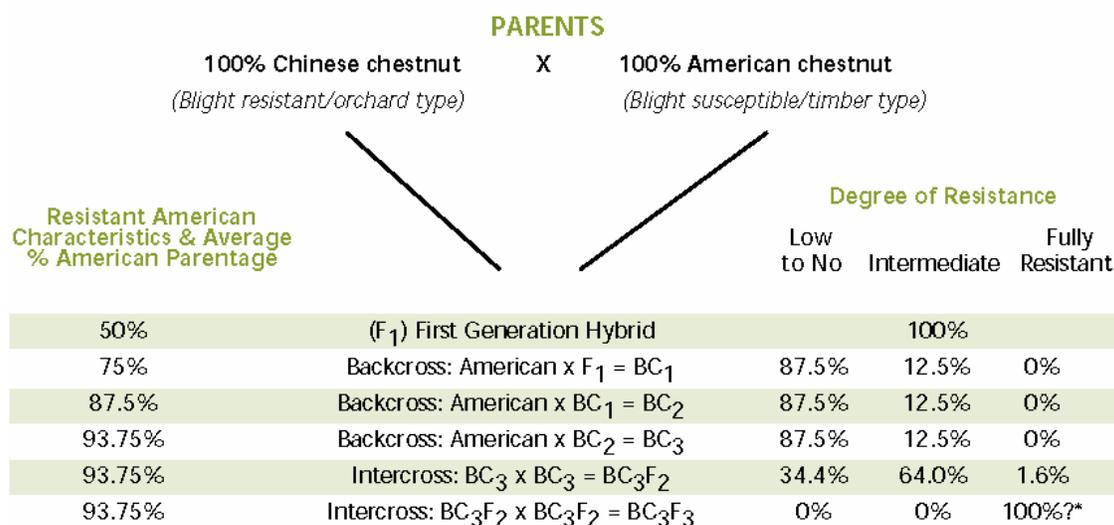
By 1950, the species was all but eradicated from the forest ecosystems.

Utilizing the genetic research of successful corn and soybean breeders, the concept of TACF's backcross breeding began in 1989, working to transfer the resistance of the Chinese chestnut into the American chestnut, hoping to achieve a diverse lot of progeny with blight resistance of the Asiatic species, growth and timber form of the American chestnut species, and enough diversity for the population to survive in the eastern United States in perpetuity.



THE PATH TO MOST RESISTANCE

(Based on three genes for resistance)



A Quick Guide to Chestnut Breeding Terminology

American x Chinese	= F ₁
F ₁ x F ₁	= F ₂
F ₂ x F ₂	= F ₃
F ₁ x American	= BC ₁
	(also known as BC ₁ F ₁)
BC ₁ x BC ₁	= BC ₁ -F ₂
BC ₁ -F ₂ x BC ₁ -F ₂	= BC ₁ -F ₃
BC ₁ x American	= BC ₂
BC ₂ x BC ₂	= BC ₂ -F ₂
BC ₂ -F ₂ x BC ₂ -F ₂	= BC ₂ -F ₃
BC ₂ x American	= BC ₃
BC ₃ x BC ₃	= BC ₃ -F ₂
BC ₃ -F ₂ x BC ₃ -F ₂	= BC ₃ -F ₃

Each generation of trees is inoculated with blight fungus and selected for resistance and American characteristics. Each backcross generation requires a minimum of 5 years to complete. The F₁ generation can be completed in 3 years. For an explanation of terms please refer to the Quick Guide to Terminology on page 9.

* This percentage of highly resistance trees is a hope of The American Chestnut Foundation. It is based upon certain scientific assumptions and cannot be proven at this time.

BC (often written as B) indicates the offspring of a backcross, the breeding of a pure American chestnut with a tree that is a genetic mixture of blight resistant and pure American stock.

F indicates the offspring of an intercross, the breeding of two genetically "pure" trees or two trees of the same generation that are already a genetic mixture of blight resistant and pure American stock. Lowered numbers indicate the number of times a breeding procedure has occurred in a tree's lineage.

Get Involved with PA-TACF

Help us make NJ-TACF happen!

This year in New Jersey, we will be having plantings in Morris County and in Stokes State Forest.

As for pollinations, we will be having activities in High Point State Park, Harthshorne Woods Park, the Wanaque Reservoir, and possibly elsewhere! That depends on you!

We'll need your help locating new trees and new planting locations, as well as helping to maintain current plantings

We need assistance in various activities almost year-round – there's always something that can be done!



Chestnut Growers Homepage: <http://chestnut.cas.psu.edu>

→ Join our mailing lists!

PA-TACF's Homepage: <http://www.patacf.org>

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Chestnut Orchard Tour

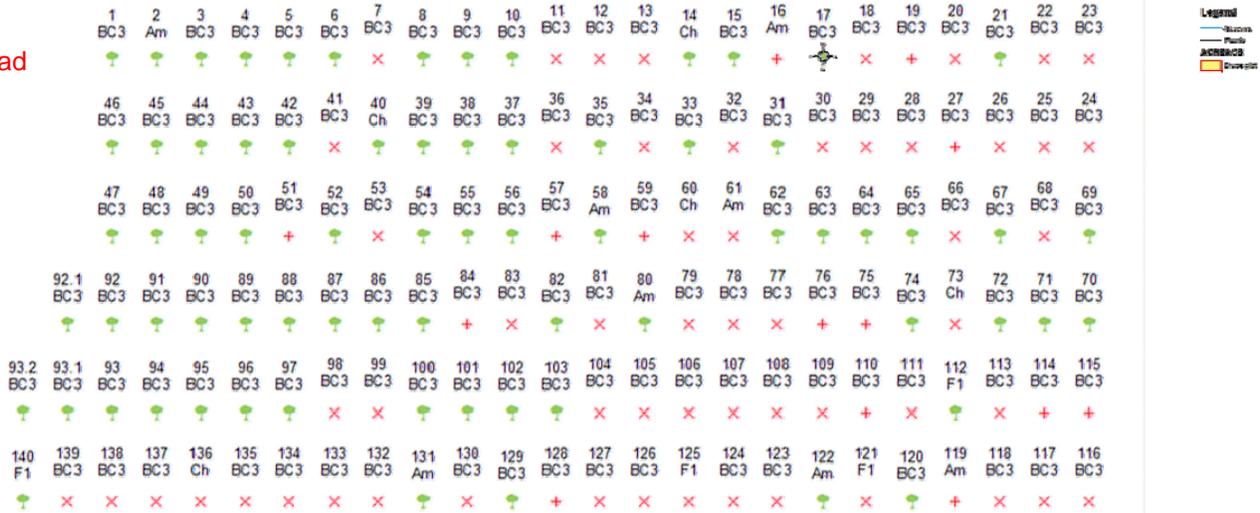
Saturday, March 11, 2006

Figure 1. NJCF's Bruce property and map of chestnut orchard. The planting is located in the southwestern tail of the Bruce property. The Chalfont series consists of deep and very deep, somewhat poorly drained soils.

+ , x - dead



North



The Bruce and Jarboe properties were the first official plantings of material by the Pennsylvania Chapter of the American Chestnut Foundation (PA-TACF). Through the donation of lands in the Stockton area by the New Jersey Conservation Foundation (NJCF), PA-TACF planted the Bruce BC3 orchard in 2003, planted with Graves source of resistance material. The next year, the Jarboe property was secured by NJCF, and test plantings of advanced hybrid material were placed on the land to test the suitability of the site for future use as a 5th generation orchard location.

Within the next two years, PA-TACF hopes to start producing 5th generation seed from its orchards derived from the Graves source of resistance; we hope to plant this on the NJCF Jarboe property.

We have the land and fencing mostly secured, but we need help from volunteers in the area who can help maintain the orchard. Maintenance entails planting, mowing, weeding, possible herbicide application, and general tree care. With your help joined with that of our current experienced volunteer work force in eastern Pennsylvania and New Jersey, we hope to eventually establish a 5-acre area with an estimated 10,000 trees.

Type	Cross	Planted	Alive (2004)	% Survival	Avg. Ht (ft.) 2003	Avg. Ht (ft.) 2004
Am	FaYo x opAm	8	4	50%	0.95	2.79
BC3	SkWe-1 x GL239	25	10	40%	1.15	2.73
BC3	LuWe-1 x GL98	41	16	39%	1.19	3.34
BC3	PRSo x GL356	56	25	44%	0.55	1.88
BC3	HYWa x GL356	4	1	25%	0.33	0.50
Ch	KWDa x opCh	5	2	40%	1.54	2.00
F1	Br99-7-081 x BuMD	4	1	25%	0.88	5.83
		143	59	41%	0.88	2.54

Figure 2. Survival and average height for the Bruce BC3 chestnut orchard.



Figure 3. NJCF's Jarboe property and outline of proposed BC3F2 orchard location.