

## THE PATH TO MOST RESISTANCE

*(Based on three genes for resistance)*

### PARENTS

100% Chinese chestnut X 100% American chestnut  
*(Blight resistant/orchard type)* *(Blight susceptible/timber type)*

Resistant American  
 Characteristics & Average  
 % American Parentage

Degree of Resistance  
 Low to No Intermediate Fully  
 Resistance

50%	(F <sub>1</sub> ) First Generation Hybrid			100%	
75%	Backcross: American x F <sub>1</sub> = BC <sub>1</sub>	87.5%	12.5%	0%	
87.5%	Backcross: American x BC <sub>1</sub> = BC <sub>2</sub>	87.5%	12.5%	0%	
93.75%	Backcross: American x BC <sub>2</sub> = BC <sub>3</sub>	87.5%	12.5%	0%	
93.75%	Intercross: BC <sub>3</sub> x BC <sub>3</sub> = BC <sub>3</sub> F <sub>2</sub>	34.4%	64.0%	1.6%	
93.75%	Intercross: BC <sub>3</sub> F <sub>2</sub> x BC <sub>3</sub> F <sub>2</sub> = BC <sub>3</sub> F <sub>3</sub>	0%	0%	100%?*	

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 F<sub>1</sub> 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.

## A Quick Guide to Chestnut Breeding Terminology

American x Chinese	= F <sub>1</sub>
F <sub>1</sub> x F <sub>1</sub>	= F <sub>2</sub>
F <sub>2</sub> x F <sub>2</sub>	= F <sub>3</sub>
F <sub>1</sub> x American	= BC <sub>1</sub> (also known as BC <sub>1</sub> F <sub>1</sub> )
BC <sub>1</sub> x BC <sub>1</sub>	= BC <sub>1</sub> -F <sub>2</sub>
BC <sub>1</sub> -F <sub>2</sub> x BC <sub>1</sub> -F <sub>2</sub>	= BC <sub>1</sub> -F <sub>3</sub>
BC <sub>1</sub> x American	= BC <sub>2</sub>
BC <sub>2</sub> x BC <sub>2</sub>	= BC <sub>2</sub> -F <sub>2</sub>
BC <sub>2</sub> -F <sub>2</sub> x BC <sub>2</sub> -F <sub>2</sub>	= BC <sub>2</sub> -F <sub>3</sub>
BC <sub>2</sub> x American	= BC <sub>3</sub>
BC <sub>3</sub> x BC <sub>3</sub>	= BC <sub>3</sub> -F <sub>2</sub>
BC <sub>3</sub> -F <sub>2</sub> x BC <sub>3</sub> -F <sub>2</sub>	= BC <sub>3</sub> -F <sub>3</sub>

**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.