

# Nuts and Bolts of Back Cross Breeding Orchard

## **Layout and Hardscape Items: Site, Deer Fencing, Irrigation**

Backcross Orchards are part of the scientific program of the American Chestnut Foundation for breeding regionally adapted American chestnut trees for eventual restoration of blight resistant tree. This is a managed volunteer program, and biological materials are subject to the TACF Germplasm agreement (see attached). Materials remain the property of the American chestnut foundation.

**Sample Backcross Orchard:** 2 or 3 Lines of ~100 15/16<sup>th</sup> KY Back cross nuts, and 20 controls (Chinese, Americans and F1s). The sample below is for 3 line orchard. (Simply reduce row length to ~210 ft and rows to 6 for a two line orchard.) Any orchard with rows longer than 300 ft is harder to manage!

**Layout:** 40 sites at 6 to 7 ft. apart (240 to 280 ft), with rows 15 ft. apart x 8 rows: 320 sites, with edges of 20 ft. along rows and 20 ft. either side at end of rows. Area for 6 ft. within row layout: (274 x 145 ft.) 39730 sq. ft. or .92 acres

**Deer Fencing:** For Solar Electric Fence, use Deer QuikNet with solar energizer with posts at corners, at gate and midway in all four sides: linear foot is ~300 x 150. Total 900 ft with (~10 posts). You must get a digital volt meter and use it – verify your fence is working every time you visit.

**Irrigation:** There must be a water source. Plan for drip irrigation to 8 rows: 8 x ~240 is ~ 2000 linear ft. of drip emitter line, which comes in 1000 ft rolls (and is light). It does take two people to effectively roll it out. Buy high quality ‘permanent drip emitters’ with 24” spacing. This allows use of Injectors for chemical treatments. Injectors (like the Mini-Dose 1% or 5%) don’t require electricity, and are relatively inexpensive. Irrigators (tensionometers) are effective tools to place in the field to monitor soil moisture and determine scheduling and volume of irrigation.