

## Progress Report on TACF China Project – Year 1&2 (March 7, 2011)

### Goal 1: To initiate an exchange of genetic materials and test blight resistance of backcross trees

#### a. Seed collections

Seeds have been collected for all three species (*C. seguinii*, *henryi*, and *mollissima*) from natural forests in Dalaoling, China during the fall of 2009. For each species, 10 sets of seeds (50 nuts in each set) have been collected and stored in a refrigerator (0-4°C).

#### b. Establish a common garden at Dalaoling

An 858 m<sup>2</sup> (0.2 ac) plantation area has been leased with a 10-year term in the fall of 2009. The area is an abandoned agricultural land with an elevation of 1270m (4177ft). The plantation area has been cleared and tilled in December 2009.

#### c. Import and export permits

We are trying to obtain import and export permits (more complicated than we expected) via different venues.

### Goal 2: To understand the biogeographical tolerances and natural ecological niches of wild Chinese chestnut species and their stand development pattern

#### d. Biogeographical tolerances

We have developed a range distribution for all major chestnut species with the collaboration from Peking University. We used global climatic data to calculate a set of bioclimatic variables such as mean annual precipitation and mean temperature of the coldest month (hardiness). We have analyzed corresponding bioclimatic factors for each species and comparing these factors among species, and presented our findings at the 2010 TACF annual meeting. We are preparing a manuscript and will send it out for peer-review this spring.

#### e. Tree core data collection

During the summer and winter of 2009, new cores were collected for *C. seguinii* (23 cores) and *C. henryi* (15 cores) on Dr. Shen's 2ha plot. No *C. mollissima* was collected due to the absence of this species on the plot. The cores have been mounted and sanded, and analyzed in spring, 2010. In addition, we have received tree core data of other 12 species (307 cores) on the same 2ha plot. Dr. Paillet is analyzing the data to reconstruct the stand dynamic.

### Goal 3: To observe and analyze blight fungus in China

#### f. Blight fungus study

Blight fungus was surveyed in six sub-watersheds in Dalaoling during the fall of 2009. A total of 45 cankers were sampled from 25 blight infested trees. Severity of canker was classified using a ranking system by Liu et al. (2002). Blight fungus from the sampled cankers were cultivated, and 41 blight races were found (one from *C. mollissima*, 39 from *C. henryi*, and one from *C. seguinii*). These 41 races can be grouped into two groups based on the color of the cultivated colony (white or yellow), or three groups based color change of the cultivation medium (no color change, light orange, or rosy red)

Blight fungus was surveyed again in Ankang, Shaanxi during the fall of 2010. A total of 175 specimens were collected including 69 from *C. seguinii*, 54 from *C. henryi*, 52 from *C. mollissima*). Blight infection rate was estimate at 40%, 20%, and 10% for *henryi*, *seguinii*, and *mollissima*, respectively. A total of 180 colonies were cultivated from both years.