

The American Chestnut Foundation
Spring Board and Committee Meetings
Southwest Virginia Higher Education Center
March 23-24, 2018

Chapters' Meeting

March 23rd, 2018

In attendance:

Committee members: Carolyn Keifer (stand in Chair for Jack LaMonica), Cathy Mayes (also representing Jack Lamonica), Yuriy Bihun, Michael Doochin, Ricky Caldwell, Greg Miller, Lois Breault Melican, Yvonne Federowicz, Allen Nichols, Glenn Kotnik, Doug Gillis, John Wenderoth, Tom Saielli (*ex officio*, recorder), Betsy Gamber (staff liaison), Lisa Thomson (President & CEO), Sara Fitzsimmons (*ex officio*), Kendra Collins (*ex officio*), and Ben Jarrett (*ex officio*).

Also in attendance: Hill Craddock, Paul Sisco, Bruce Wakeland, William J. Cude, Dennis Melican, Barbara Tormoehlen, Kim Steiner, Robert Sypolt, Larry Yozwiak, David Morris, Brian McCarthy, Michael French (taff), David Kaufman-Moore (staff), Cherin Marmon-Saxe (staff), Heather Nelson (staff), Judy Antaramian (staff), Shana Zimnoch (taff), Brandon Yanez (staff), Jim Tolton (staff), Jared Westbrook (staff), and Jules Smith (staff)

Carolyn Keifer in for Jack LaMonica, Introduces herself and asks committee to approve minutes.

Jared Westbrook Presents *Integrating blight resistance*

First a discussion on the OXO program..OXO was inserted into a single clone – Ellis 1. We will move from this one tree to a diverse population, avoiding bottlenecks & inbreeding. Therefore we can't simply cross Americans/BC trees with Ellis 1 and start reintroduction. We need to increase diversity.

At each cross with Ellis 1 there is a 50% chance of inheriting the OXO gene. We want to cross for three generations to dilute the original Ellis 1 genome, but retain the OXO gene at each cross.

Hill wonders why not simply intercross to existing, advance generation TACF backcrosses?

-----Because we need to backcross over multiple generations to dilute the original Ellis 1 germplasm, selecting progeny with the dominant OXO gene – similar to our backcross program.

Once chapter start working with OXO pollen they will initiate the first generation of crosses. We will also stack all of the Meadowview sources of resistance into the breeding program, combining all sources

with OXO. We will continue backcrossing for three generations to increase diversity and local adaptation.

We will simultaneously make similar backcrosses with pure Americans for three generations, potentially adding up to 500 new sources of American chestnut to the program in the first cross (across all chapters), selecting for resistance at each generation, and crossing with another 500 sources, etc. The large numbers of chestnuts at each generation provide the effective population size to increase diversity and minimize inbreeding.

Note that Scott Merkle has also inserted the OXO gene into a Virginia source of American chestnut. Adding another transgenic source should greatly help in terms of the population size and inbreeding coefficient.

Among the progeny selected for the OXO gene, we will also select against founder genomes using genetic markers.

Additionally, we will attempt to speed up pollen development using red:far red lighting to encourage catkin development within 1-2 years (red:far red lighting has been shown to induce early flowering in other species) . Pollen and/or female flowers could be available to cross with unique sources of Americans within a short timeframe.

-----This means we need to augment our American chestnut germplasm conservation through seed harvest, seedling transplant and/or grafting. We need to especially go after areas underrepresented in the current chestnut program.

-----Tentative target for new sources of American chestnut may range between 100-250 trees per chapter (assuming 33% survival to reproductive maturity). Also while searching for new sources of American chestnut volunteer can collect leaf samples at each location. The samples can be used to study genetic diversity across the range.

Chapters can get involved by helping find new sources of American chestnut and transplanting to GCO's.

Thoughts/Questions

Be careful not to over select for early flowering – we could inadvertently select for those genetic traits.

Yvonne wonders about spacing in the GCO to encourage long-term survival. We want wider spacing.

Tom's talk

Tom presents on "finding new sources of American chestnut" and establishing GCO's

Chapters can make finding chestnuts a goal. New sources could provide germplasm for conservation orchards and leaf samples for landscape genomics research

Working with chapter members and other unaffiliated groups, plan hikes to train on tree ID and TreeSnap.

Genome-informed strategic germplasm conservation: Collect a range-wide sample of leaves from 1000 American chestnuts for DNA analysis

- 200 locations
- 5-10 individuals per location
- Grouped samples
- east v. west
- high v. low
- north v. south
- unique landforms

should allow DNA sequenced for range-wide diversity, population bottleneck, and genome-environment association analyses

Q how many trips and who collects the leaf samples?

---Jared will send a protocol

Allen, if you are searching state-wide, how far apart do sources need to be to be considered unique?

----For leaf samples, samples should be collected greater than a mile or more apart, except when collecting a transect of up to 5 samples collected at least 100 meters apart.

There are some misgivings regarding digging up chestnuts. Some folks like the idea of grafting. Greg Miller notes that they do not survive very long and do not produce a ton of female flowers. There are a lot of problems with grafts, so you would need a graft maintenance program involving repeated grafts long enough to produce seeds.

Betsy and Jules Discuss the Chapters Page on the TACF website

Chapters Page will be coming soon. However, it is an ongoing process. Stay tuned for continued development.

It will be password protected, just for chapters in-house website needs.

FYI - Jules is our director of communications, and handles all thing “communication and/or marketing” remember that he is here to help the chapter with their needs. (Including: communication and marketing, contact information, grants info, membership resources, and science), now you can find what you need in one location - Jules.

Story submission guidelines

You can find “story submission guidelines” on the TACF website, should make it simpler to submit articles to the Journal. Note that a good article for the Journal should be approximately 700 words, with several pictures (must be high resolution). Articles in the eSprout should run approximately 90-100 words and one or two picture. However, if your eSprout article is larger, the edited version runs in the eSprout and the full-length version gets put on the website news page, which is cool.

Social media, etc.

We get a lot of action on our Social media (twitter and Facebook) so pitch in. It’s a photo and a blurb about an event or something cool.

“In the News” – Our news page, link to it from the website (or via eSprout) has cool, short stories; archived, searchable stories available.

“Website Events Calendar” - A calendar of events for TACF and all the chapters can post any interesting upcoming events.

Note that current TACF branding and logo can be found on the “chapters resource page” – please use the correct logo and/or refer to our vision & mission statements here

“We want to hear from you” -We want input, stories, info, anything about your chapter is doing. Story submissions: Jules discussing guidelines for eSprout , journal and social media. We really want to involve the chapters, we want your stories.

Chapter sharing of seeds and seedlings?

Pure American chestnuts that can be purchased through TACF are sold-out (1500 seeds). The pure American chestnut program is always popular. Should happen every year.

Alternatively, B3F3 stock is less this year, probably the numbers will go down a little more as we continue culling the Meadowview seed orchards, but as the selected trees have more room to grow, they will produce more seeds over time...

Q? Yuri wants to know about the B3F3s that go to nurseries. Sara explains that several thousand go to grant-funded minedlands projects, flight 93, research projects, and even chapters if they put requests in

early (for such requests we need to know, what, why, when, seeds or seedlings, funded project, etc.) those request go on a list and staff will review and allocate material as possible.

Transgenics

Response to transgenic program? Cathy feels there is a strong anti-GMO feeling in Virginia and we need to be able to explain it to folks, justify it. Allen says that if you give a good presentation and explain what we're doing and why, folks will be open-minded. Bruce Wakeland has given talks on this and gets a good response; last year he gave a presentation to a grassroots forest preservation group that loved it.

Yvonne gets various opinions in her chapter, with some notable objections to GMO chestnuts. She recommends that TACF offers options for folks, not just all transgenics. Allen notes that the NY folks are right next to the MA folks and there must be a full range of opinions. Presentation of the topic is probably very important.