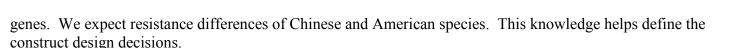
The BUR The New York State Chapter of the American Chestnut Foundation Inc. Richard R. Radel 23 Carriage Circle Williamsville, NY 14221



Regional Performance Trials Highlights

NY-TACF has established six NY-based "USDA APHIS BRS-permitted" field tests for evaluating transgenic American chestnut trees. CESF has two university field research forests near Syracuse. Deer fencing has been added to research plots.

Transgenic American Nuts Highlights

Another exciting event occurred in 2011 in the oldest Chestnut planting in Syracuse. In the spring of 2011, we observed female flowers on some of the non-transgenic control trees, and male flowers on one of the transgenic clones. We quickly bagged the transgenic trees as well as enough female flowers to make our first control crosses between transgenic male parent and several of our flowering females. In late September, we collected the burs and extracted 41 apparently viable chestnuts. They are stratifying in the refrigerator and we plan to grow them into whole plants as soon as they germinate. To the best of our knowledge, this is the first time a transgenic American chestnut tree has been crossed with anything!

Conclusions

In conclusion, in 2011 we have increased dramatically the number of genes being transformed into chestnut, the number of transgenic trees in the development pipeline, and have started field inoculations and canker evaluations of our earliest events. We also increased the number of field test sites to six.

What a great membership we have. <u>THANKS TO ALL WHO CONTRIBUTED TO THE 2011 FUND DRIVE.</u> The total donated as of December 19, 2011 was \$18, 834.00 and we paid Grants to SUNY-ESF of \$10,000.00 and to University of Georgia of \$8,000.00. We still owe \$6,000.00 to SUNY-ESF Research Fund by April 30, 2012 in accordance with the Grant we made them in 2011. We are sure our membership will come thru again. *THANK YOU*.

Do you know how much the Grants we have made total for the last seven years? It's (\$711,127). <u>Thanks to all who donated.</u> The breakdown is as follows: \$572,650 to research at SUNY School of ESF & University of Georgia Research Department, \$90,000 for Growth Chambers, & \$48,477 for other research, fencing, plant identification & culture initiation.

Remember this in addition to all our normal income and expense we have every year such as taxes, postage, insurance and meeting costs.

Again Thank You, Respectfully Richard R. Radel Secretary/Treasurer



Volume 17, No.1

PRESIDENT'S MESSAGE

This year's annual meeting was a milestone for TACF-NY and has fulfilled a personal eighteen year ambition. Now that a multi-pronged plan is being us I believe that the TACF program for blight resistance the best track possible since TACF started. This plan includes our New York Chapter's Genetic Modification approach as a significant contributor.

Two years ago when the national TACF Boar Directors approved the Genetic Modification of Ame Chestnut plan at their October 23, 2009 board meetin opened the door to all other American Chestnut disea research being included. During these intervening tw years it helped others to see how their research comp the overall program and can be a part of it. This complimentary perspective seemed to come into focu year at our joint annual meetings at Beaver Hollow.

It was clear to me that scientists who have bat the blight problem in singular ways are now recogniz that their individual research is complimented by an program that includes genetic modification. I believ these scientists will work together to get the very bes solutions to having the highest blight resistance possi

For his leadership of the committee and author of the Genetic Modification of American Chestnut pl Kim Steiner was awarded the TACF-NY Board of Directors' Award. We honor his foresight and fortitu Thanks Kim!!

The combined meeting of TACF and TACF-I Beaver Hollow was the first time I could sense that n people agreed to the new integrated approach to resea including; backcross breeding, blight hypovirulence Phytophthora and, genetic modification. An approach has us all working TOGETHER towards discovering most resistant American Chestnut possible and ultimate restoring the American Chestnut tree.

Long Live the American Chestnut! Herbert F. Darling, Jr.President, TACF-NY Winter 2011 - 2012

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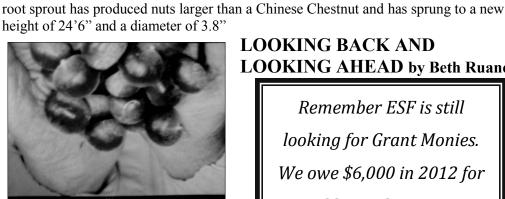
TACFNY 2011 OFFICERS AND DIRECTORS OFFICERS 2012

H. F. Darling, Jr., President Frank Munzer, Vice President Richard Radel, Treasurer and Secretary

This tree has been nursed along by a member, William Bobownik, 90, Hornell, NY

through root sprouting and renewal. From an original American Chestnut lineage, this





LOOKING BACK AND LOOKING AHEAD by Beth Ruane

Remember ESF is still looking for Grant Monies. We owe \$6,000 in 2012 for Additional Testing.

This Bur looks forward and back with some dedication. As you

can see above, a tree once thought done for is now producing nuts again thanks to the dedication of a member and his tenacity. This is the case with so many of our members. Our President leads by example in showing us how to keep moving forward while we hold on to our history. Some of our members are not able to see these great achievements we have made throughout these years, but rest assured their labor is not in vain as their results show forth as well.



Brvan Burhans and Herb Darling, Jr.

William White Plantation Wild American Chestnut and Bur Transgenic Trees

I had Chestnut Stuffing and Chestnut Pie on Thanksgiving and can see the future is bright. The caviar of nuts is alive and doing well. In the words of our leader, long live the American Chestnut. I look forward to having an opportunity to produce wood products from this valuable timber tree as well as enjoying many more years of shade, beauty and a few pricked fingers during harvest. One of my friends even remembers tossing them at someone. Ouch. One thing is for sure, we are all a hardy group and the hands and feet on the ground are sure appreciated. Keep up the good work.

2011 Science Report Highlights

A. Renewing NY Chapter District Orchards and Mother Tree Program:

Each autumn, the New York chapter conducts a "nut exchange" during our annual meeting. Our nuts are collected from two sources; (1) newly located "mother trees" that have been verified as American chestnut and that have other American chestnut trees nearby to act as pollinators; and (2) from our germplasm

conservation orchards located in different districts within NY state. Each year we try to collect and distribute about 500-2000 nuts. All of these nuts are open pollinated. There are four uses for NY Chapter nuts: 1) To maintain and expand the genetic diversity of the NY chapter orchards. Annually, chapter members replace old trees that die with seedlings from new mother trees, and establish new germplasm

- conservation orchards.
- trees for the experimental research plots.
- orchard programs.
- 4) To supply American chestnuts for the Forest Health R&D project.

The conservation orchards mentioned in #1 above, are a true treasure chest of genetic diversity, but they serve as second purpose as well. Pre-blight North America was filled with farmers and loggers and little nurseries and probably hundreds of "Johnnie Appleseed" type folks that knew how to "grow stuff" including chestnut trees. By late in the twentieth century, the American chestnut was largely gone and so were the folks that knew how to grow it. Their descendents had moved into town and become dentists, factory workers, college professors, and thousands of other things besides people who made a living from the land.

The people charged with establishing and maintaining the New York State Germplasm Conservation Orchards are not professional horticulturists or nurserymen. They are the dentists, factory workers, and college professors mentioned above. By combing through the old books, talking with even older people that remembered little snippets from watching grandpa, and from hundreds of home-brew experiments, they have relearned an incredible amount about growing chestnuts into trees. The orchards are a wonderful resource, but so are the Chestnut Foundation members that have created them. **B.** *Biotechnology Activities Section:* Background

plots and enthusiastic orchard crews. We are impressed by the skills and dedication of the two principal field planted annually.

Over the last few years, our program funding and knowledge base has been increasing dramatically because of the "Forest Health Initiative" and the NSF sponsored "Chestnut Genomics Project" relationships with TACFNY and the SUNY –ESF program. We have biotechnology information flow now coming from approximately six universities and science institutes and more than 14 scientists.

As a consequence, we have in our pipeline over 31 different vector constructs that are being screened for imparting blight resistance. A vector construct is the combination of a candidate gene or genes and the selectable marker genes that end up in the chestnut tree. Twenty-one of these vector constructs have candidate genes that come from Chinese chestnut (C. mollissima) isolated because of knowledge gained from the genomics project. Seven of these vector constructs have a combination of candidate genes from both Chinese chestnut and other sources. There is a new leaf assay technique in development to provide earlier screening. From these early screens and field trials we will select the best candidate genes for advanced development. These candidate genes have been assembled with different promoters to create a variety of "gene constructs." Promoters are natural to all plants. Promoters are line on/off switches or rheostats for genes that control how much of the gene's product to make and in which part of the plant to make it. Some promoters express in all plant tissue and they are always on. Some promoters turn on when the plant is challenged by a disease or by wounding. Some promoters only switch on in a specific plant tissue, like vascular tissues. We have constructs in the pipeline that will test different combinations and types of promoters with 1-3 different

2) To supply nuts for research use by the SUNY-College of Environmental Science and Forestry (CESF) American chestnut biotechnology program. These nuts are primarily used to grow comparative control

3) To supply TACF with nuts for use in the national R&D backcrossing program and in other state chapter

For two decades, the NY Chapter's focus has been to use plant science biotechnology tools to develop blight resistance. Our long term R&D partner has been CESF at Syracuse, NY. We have provided core funding for R&D, specialized equipment, growth chambers, rehabilitation green houses, provided deer fencing for field investigators; Dr. Maynard and Dr. Powell and their technicians, graduate and undergraduate students. The research program has adapted cutting edge techniques to the chestnut species. The R&D program creates transgenic trees by en embryo regeneration system. The system takes approximately two years from the lab to the field. The R&D system is steadily increasing its capacity and efficiency toward 1000-2000 transgenic trees