

Question Report		Monday, January 11, 2021	
#	Question	Asked by:	Answer(s)
1	Hello Mike and Panelists I am a graduate of the stockbridge school of agriculture in Amherst Mass. I was wondering what type of apprehensions your community might have in bringing back such a promoniate species? Specifically in regard to the northeastern ecology.	Carlino	<p>A blight-tolerant American chestnut placed into today's environment where blight spores are widespread would be expected to behave similarly to the highly susceptible original chestnut in its pre-1890 environment devoid of blight spores. There's no evidence that the original American chestnut was invasive. It clearly was a dominant tree in many areas in the late 1800s and early 1900s, but it is likely that it achieved much of this dominance because of uncontrolled logging. The chestnut has an unparalleled ability to regrow from cut stumps. Extensive clear-cutting of forests in the 1800s opened the door to vast expansion of the tree in cut-over lands, which included much of the Northeast. Based on data on "witness trees" (special specimens noted by early European explorers) and other reports by early observers of the Northeastern forest, the chestnut represented only about 5% of trees, not 25% as it did later, after extensive logging facilitated its spread (Faison, Edward K., and David R. Foster, 2014, Did American Chestnut Really Dominate the Eastern forest? <i>Arnoldia</i> 72(2): 18-32).</p> <p>The tree clearly was very common 120 years ago, and was probably a "foundation species" in many areas, playing a key role in nutrient cycling and to seed consuming populations. If restored it's likely the tree would play a role in helping maintain the resiliency of forests in the face of the many threats forests face today, e.g. invasive species and climate change. But the tree is likely to extend its range relatively slowly. It is not self-fertile and depends in large part on birds and other small animals to disperse its seed. After the end of the last ice age, many species of trees that had been pushed into refuge areas in the southern edges of the continent began to spread north. Most trees, e.g. white pine, oak species, maple species, and elm were able to extend their ranges northward 200 to 300 meters per year and arrived in the northeastern U.S. region about 10,000 years ago. The chestnut, however, did not arrive there until about 2000 years ago. It expanded its range slowly, averaging about 100 meters per year (Davis, M. 1983. Quaternary History of Deciduous Forests of Eastern North America and Europe. <i>Annals of the Missouri Botanical Garden</i> 70:550-563.)</p>
2	I know we are in Pennsylvania and this is outside of their native range, but I wonder if folks Michigan groves of American Chestnuts still exist? Are folks still working with them? Are folks still working with the concept of hypervirulence?	Ries	<p>Yes, the Michigan groves are pretty well documented and were well-studied, primarily by researchers at Michigan State.</p> <p>There have been some recent papers published on those stands. Here's a really good overview and recent paper (2020) <a href="https://www.sciencedirect.com/science/article/abs/pii/S1754504819302442">https://www.sciencedirect.com/science/article/abs/pii/S1754504819302442</a></p>
3	Check out this link: <a href="https://www.canr.msu.edu/chestnuts/establishing_orchards/">https://www.canr.msu.edu/chestnuts/establishing_orchards/</a>	Kennedy	Thanks for providing this link.
4	For identification in the winter, you mentioned the American Chestnut trees hold onto their leaves. Do Chinese or other introduced chestnut trees also hold onto their leaves in the winter?	Gruwald	Hi Anna, Yes, Asian trees hold on to their leaves in winter too. The tendency to hold on to leaves is most pronounced in younger trees of all the chestnut species.
5	Are any of the commercially available chestnut trees that are now on the market worth planting or is the likelihood that they will succumb to blight? I have an area where I was planning on planting chestnut trees but if this remains an exercise in futility, I will plant different species.	Meloy	Virtually all of the trees and nuts that are available in the market today are either hybrids of Asian and American trees or of Asian and European trees, or are pure Asian trees. Many of these trees are quite blight resistant, and will be good nut producers. It is possible to acquire nuts of American trees too. For more info, see <a href="https://patacf.org/nut-sources/">https://patacf.org/nut-sources/</a>
6	If we find surviving, nut-bearing American chestnuts, would the ACF like us to let them know and send coordinates?	Smith	Yes, TACF is interested in hearing about surviving American trees. See <a href="https://patacf.org/report-a-tree/">https://patacf.org/report-a-tree/</a> for details on how to report a tree that you find.
7	<a href="https://www.canr.msu.edu/chestnuts/Michigan%20Chestnut%20Management%20Guide%202020.pdf">https://www.canr.msu.edu/chestnuts/Michigan%20Chestnut%20Management%20Guide%202020.pdf</a>	Kennedy	Thanks for providing this link.
8	Do we have any maps that help in predicting when larger surviving chestnuts might flower (based on latitude and elevation) particularly across the northern areas of Pennsylvania?	Wenderoth	I'm not aware of maps that show blooming dates. My own experience over the last several years is that American chestnuts in the Northern Tier of PA, for example in the Allegheny National Forest, reach their peak of bloom around July 10. (M.A.)

9	Is there somewhere we should share information if we find surviving trees?	Coleman	Yes, TACF wants information on surviving American chestnuts. See <a href="https://patacf.org/report-a-tree/">https://patacf.org/report-a-tree/</a> for details on how to report a tree that you find.
10	I am looking for some viable american chestnuts. I am not sure where to locate them?	Walker	People can get seeds through TACF by joining the organization with a "seed level" contribution. Also, at the TACF growers' meetings, seeds are sometimes available for free or for a minimal cost. Also, there are many sources of chestnut seeds and trees online; most of these are very likely hybrids or Asian trees. Searching with google or another search engine for "chestnut seed" will find some of these sources. For more, see <a href="https://patacf.org/nut-sources/">https://patacf.org/nut-sources/</a>
11	If we find a chestnut is there an easy way to tell American from Asian?	Cattermole	There are clear differences between the Asian and European trees and American trees. One often obvious difference is that the Asian trees, especially, tend to have a branchy growth habit, more like an apple tree than like, say, an oak tree, which resembles the American chestnut in growth habit. Also the leaves, stems, buds, etc. are somewhat different. For more info on identification, see <a href="https://acf.org/resources/identification/">https://acf.org/resources/identification/</a>
12	I have three chestnut trees in my yard that produce lots of nuts. But all the nuts all have weevils. How do I eradicate the weevil?	McIntyre	The University of Missouri's Center for Agroforestry has a useful publication on chestnut weevils and how to control them. See <a href="http://www.centerforagroforestry.org/weevil.pdf">http://www.centerforagroforestry.org/weevil.pdf</a>
13	I may have missed this - but are the offspring of surviving blight resistant wild trees NOT blight resistant themselves? thanks	Goody	Some surviving wild American trees do appear to have a degree of blight resistance, although it is probably moderate at best. Since the tree is not self-fertile, offspring will have characteristics of both the mother tree and the pollen-providing tree. If both parents have some degree of blight resistance, it's likely that at least some of the offspring would inherit this, and could conceivably have even more resistance if some of the blight-resistant genes were homozygous in the offspring. Unfortunately, however, there does not appear to be evidence that wild American trees exist with a strong degree of blight resistance or tolerance.
14	The Sustainable Forestry Initiative and organic farming guidelines prohibit gmo plants how will TACF keep these gmo plants and genetics from spreading to areas where they are not wanted/allowed?	Anonymous	Lumber and organic certification guidelines require landowners to take reasonable steps to prevent the inclusion of GMO products on their properties. As long as the landowner does not outright plant/use GMOs on their certified lands and/or knowingly allow those materials on their certified properties, those landowners remain certified. The current SFI standard does appear to prevent certification of lumber from GE chestnut trees. However, SFI states that, regarding fiber from GMO plants, that it intends to "proactively review the research that is still being conducted..." and it may be that they will revise their standards in the future to accept wood from GE chestnuts. There is reason to hope that these standards, as well as standards that apply to organic food production, will be revised to include the GE chestnut now under review, the Darling 58, because, based on available research, these GE chestnuts, and therefore their wood and their nuts, are no different from these products from wild chestnuts except for the added gene from the wheat plant - which is present in all wheat, including organic wheat.  Regarding unwanted spread, chestnut is remarkably difficult to get to spread, a factor which will make restoration difficult and require decades to centuries. The USDA's current review of the Darling 58 chestnut is evaluating the "plant pest risk" of the tree. Weediness and unintended spread is a factor they will review. For more on this, see the comments to the USDA regarding weediness and spread to see the literature and information regarding how rare unintended spread will be. Also, see the answer to a question from another attendee regarding concerns about impacts on the Northeastern ecology of bringing back a prominent species such as the American chestnut.
15	If we find an American Chestnut should I take a leaf so that scientists can have a tissue culture?	Wickert	Yes, taking a leaf sample and sending it to TACF is a good way to determine if a tree you find is American. See <a href="https://patacf.org/report-a-tree/">https://patacf.org/report-a-tree/</a> for details on how to report a tree that you find.
16	Wondering about the survivors in the Rockies. I understood that the initial spread of the blight was not by the spread of spores alone and that is partly why the fire break theory failed. I understood that the nursery industry had a major hand in spreading the blight across the entire US — west coast, Midwest, etc. — by shipping infected Asian chestnuts throughout the nation. How have these Rockies survivors escaped infection?	Ries	Some American chestnuts growing outside the original range of the tree have so far escaped blight infection because the blight spores haven't reached them in sufficient quantity to cause infection. It does appear, however, that the blight is gradually spreading throughout the continent. For example, large surviving American chestnut trees that were once present at the Arbor Day Farm in Nebraska City, Nebraska have now died and been cut down.

17	(tee-anna) I am a graduate student studying timber rattlesnakes in PA at East Stroudsburg University under Dr. Thomas LaDuke. How has the blight contributed to the decline of certain wildlife species due to the reduction of reliable mast year-to-year? Has this contributed to species extinctions or T&E status in the northeast US?	Johnson	There does not appear to be evidence of extinctions of vertebrates due to the loss of the chestnut. However, several species of insects have gone extinct due to this loss. See <a href="https://acf.org/ct/news-and-updates/chestnut-and-invertebrate-extinctions/">https://acf.org/ct/news-and-updates/chestnut-and-invertebrate-extinctions/</a>
18	So if it's blighted, it's likely American ?	Cattermole	Surviving American chestnut that don't show blight symptoms are rare. But Asian trees often show considerable evidence of blight also. However, many Asian trees reach a large size and survive, even if they do suffer some degree of damage from blight.
19	How much does the ease of native and foreign chestnuts hybridizing create problems for us in relly knowing what we're working with?	Wenderoth	Indeed, with the ease with which these species cross pollinate, there can be hybrids that can pose challenges in identification. However, knowing the exact genetic makeup of any given tree would not necessarily interfere significatnly with the 3BUR work.