PUBLIC COMMENT PERIOD: Master Messaging Guidelines

Please consider voicing your opinion by submitting a public comment

Public comments play an important role in the review process by the US Department of Agriculture's office of Animal and Plant Health Inspection Service (USDA-APHIS). USDA-APHIS will review and respond to all submitted comments, including those made by scientific, economic, legal and technical experts, and the general public. All relevant comments will be factored into its final decision. Read the PCP FAQ's for more background on the public comment process, and The Transgenic American Chestnut Tree for more on the Darling 58.

Below in **bold** are key factual conclusions and supporting logical points that are addressed in SUNY-ESF's Petition for Nonregulated Status, focusing on those that are likely to have the most relevance to USDA-APHIS's decision-making on the petition. For commenters with a deep academic or science background, and whose research or experience is supportive or corroborative of one or more of the factual conclusions (**High-Priority Scientific Messages and Proof Points)** offered by ESF in the petition, it would be helpful for those commenters to voice their agreement with and support of ESF's key conclusions, including explaining the scientific and factual basis for such support. Commenters without special expertise on the key science issues addressed in the Petition can help by addressing in their written comments their take on the science and other issues outlined in the **General Messages and Proof Points** section below.

What is most helpful are public comments which are **unique** (i.e. not copied and pasted from a template) and **personal** (i.e. reflecting your own particular expertise, experience and viewpoint). The most valuable comments focus on **factual and/or scientific** arguments, but authentic comments expressing support for the use of transgenic trees in restoration and even personal use are important as well.

USDA-APHIS HIGH-PRIORITY SCIENTIFIC MESSAGES AND PROOF POINTS

The Darling 58 Transgenic Tree is not weedy or a plant pest.

- The American chestnut tree is not naturally an invasive weedy species, it does not present plant pest risks, and the transgenic tree maintains all of these traits.
- The Darling 58 is created by inserting a gene called oxalate oxidase (OxO) from wheat into the genome of American chestnut to significantly enhance its blight tolerance. OxO is also found in a variety of wild and agricultural plants, so it does not present unique environmental risks.
- This blight tolerance comes from a single gene, and no existing American chestnut genes have been removed or replaced, which means that the transgenic trees are essentially 100% American chestnuts.
- Introducing blight tolerance via OxO does not introduce any traits that are wholly foreign to chestnut species, since Chinese chestnuts and chinquapins also have mechanisms for degrading oxalic acid. Therefore, the transgenic tree will retain the traits of the wild-type tree.
- Insertion of OxO does not result in harmful changes to the organism, nor does transferring OxO genes to sexually compatible organisms.
- Inheritance of the OxO gene by transgenic offspring is predictable and not risky.
- The Darling 58 will not injure, cause disease or damage any other plants, and it will not create other weedy plants or plant pests.

There are no additional risks with the Darling 58 transgenic tree compared to traditionally-bred trees, and it will not pass on unexpected traits to the American chestnut tree.

- The transgenic American chestnut tree is no riskier than unregulated, traditionally-bred backcross or hybrid chestnuts.
- Darling 58 and selected transgenic offspring have already been bred with dozens of unrelated wild-type chestnuts, and resulting seedlings show no unusual growth or other detrimental effects.
- Biotechnology has repeatedly been applied successfully in human health and agriculture, such as insulin production (since 1978) and to crops such as corn, cotton and soybeans. As of 2019, according to USDA data, over 92% of corn, 95% of cotton and 94% of soybeans planted in the US are genetically modified crops, and there have been no verified reports of human, animal, or environmental harm as a result of these modifications.
- Genetic engineering is now a mature technology that offers much hope to forest health, species restoration, and other conservation efforts.
- Potential concerns like pathogen impacts and changes to forest ecology are not specific to transgenic trees, and also apply to backcross or other restoration methods.

When compared to traditional chestnut breeding, there is no reason to expect that the Darling 58 transgenic tree will have adverse or unpredictable impacts on forests, biodiversity, or non-target species, or adverse long-term effects on the ecosystem.

- The transgenic tree and introgression of the blight tolerance trait into the wild population will not have unpredictable or harmful impacts on forests, biodiversity, native tree species populations, endangered species or beneficial non-target species.
- The OxO gene in particular is especially unlikely to have any negative impacts since it's found in a wide variety of both wild and cultivated plants.
- A unique conservation aspect of using the transgenic, blight tolerant American chestnut trees is that a portion of their offspring will be wild-type, non-transgenic trees, which will preserve original wild-type individuals for the foreseeable future, allowing future generations to grow and study unmodified fully American chestnut trees.
- Studies to date of the interaction between the transgenic tree and its ecosystem have not shown any indication of adverse environmental impacts.
- Test plots to study long-term effects have already been planted in order to gather additional data before large-scale restoration plantings begin and allow for any necessary modifications.
- Potential large-scale reintroduction of this tree will be done slowly in iterative phases and meticulously monitored by scientists.

GENERAL MESSAGES AND PROOF POINTS

The American chestnut tree is at the edge of extinction and can't survive without human intervention.

- The American chestnut tree was a keystone species vital to the forest ecosystem, economy, wildlife, the farming community, and other residents of the eastern United States.
- An invasive fungal pathogen (causing chestnut blight) introduced from Asia in the late 1800s decimated over 3 billion American chestnuts along its native range, making the tree functionally extinct today.
- Through biotechnology, we can rescue not only the American chestnut tree, but also provide hope that other threatened tree species can be saved.

Scientists have ensured that the process to create and plant the Darling 58 Transgenic Tree is safe for humans and the environment.

- No tests to date have shown any safety concerns or elevated risks from the Darling 58 transgenic tree. Example studies are described here:
  - Environmental Interactions with Transgenic American Chestnut
  - Nutritional Safety Tests
  - Safety Tests on Wildlife
  - Safety Tests on Plants and Fungi
- Test plots to study long-term effects of transgenic trees compared to traditionally-bred chestnuts have already been planted in three different states across the native range under APHIS permits. This will allow scientists to gather additional data before large-scale restoration plantings begin and allow for any necessary modifications.
- Potential large-scale reintroduction of this tree will be done slowly in iterative phases and meticulously monitored by scientists.

Successfully reintroduced American chestnut trees would offer a wide range of environmental benefits and could pave the way for the restoration of other species in the future.

- The return of the American chestnut will help restore ecological relationships that have been absent from the Eastern forests of the United States for more than a century.
- Restoration of forests and large-scale tree plantings have proven to directly mitigate the negative effects of climate change by storing carbon for long time periods.
- If we are successful in restoring the American chestnut to the forest, scientists may be more easily able to replicate this process with other endangered species in other ecosystems.
- Through the use of biotechnology, we may be able to save or restore endangered species - allowing them to inherit new traits such as disease resistance, drought tolerance, or adaptability to changing environments - while retaining 100% of their original genes.

The Darling 58 transgenic tree is unlike any other genetically engineered crop, or any hybrid plant, because it retains all of its original genes.

- Biotechnology is being used for the sole purpose of saving the tree by enhancing the chestnut tree's blight tolerance, not by changing any of its other characteristics for commercial gain (i.e. traits like productivity, aesthetic appeal, or hardiness have not been modified).
- The singular goal of creating a blight-tolerant tree is to rescue the American chestnut so that it can survive in its original ecosystem.
- This blight tolerance comes from a single wheat gene found in nature, which has not replaced or interrupted any existing genes, ensuring that Darling 58 maintains all of its original traits.