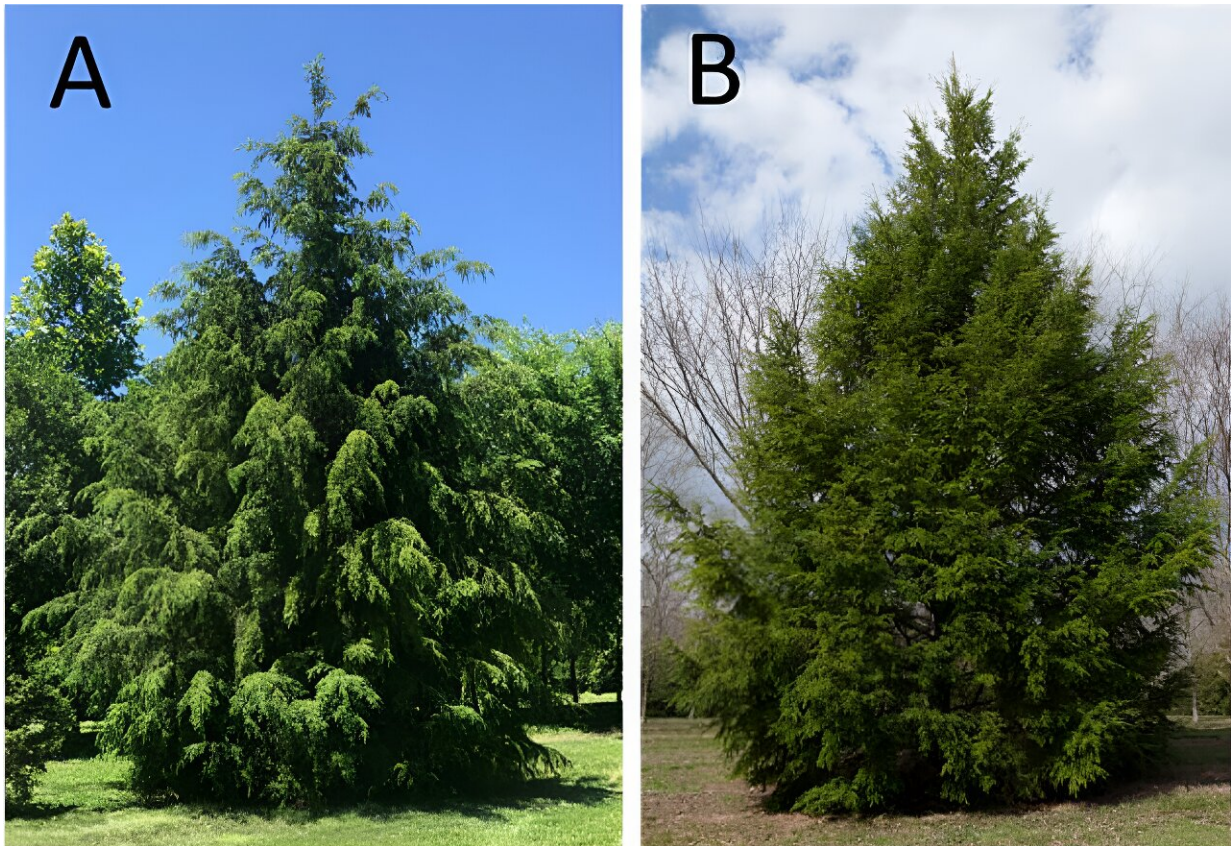


First Adelgid-resistant hemlock hybrids, 'traveler' and 'crossroad,' unveiled

November 30 2023, by Jane Cerza



Mature growth form of *Tsuga* 'Traveler' (A) and 'Crossroad' (B) grown in the field in Beltsville, MD. Credit: American Society for Horticultural Science

Hemlocks [*Tsuga* (Endl.) Carrière] are foundational, climax coniferous evergreen trees in forested ecosystems and are also iconic in cultivated

landscapes. In the United States, the eastern hemlock, *T. canadensis* (L.) Carr., is a well-known and economically significant species for forest and cultivated landscapes.

However, this species, along with the Carolina hemlock, *T. caroliniana* Engelm., is highly susceptible to feeding damage by the introduced hemlock wooly adelgid (HWA), *Adelges tsugae* Annand (Hemiptera: Adelgidae). Although the insect can be partially controlled using a combination of cultural practices, insecticides, and biological control methods, a critical component of long-term control will likely be genetic host resistance.

Scientists at the U.S. National Arboretum initiated a [breeding program](#) in the 1990s to develop new hemlock hybrids with improved resistance to HWA and superior ornamental traits. Breeding strategies are focused on interspecific hybridizations to incorporate HWA resistance found in Asian *Tsuga* species [*T. chinensis* (Franch.) E. Pritz, *T. diversifolia* (Maxim.) Mast., and *T. sieboldii* Carr.]. These crosses have resulted in more than 100 confirmed interspecific hybrid plants.

We have selected, evaluated, and released two of these hybrids, *T. chinensis* × *T. caroliniana* "Traveler," and *T. caroliniana* × *T. chinensis* "Crossroad," for their improved resistance to hemlock wooly adelgid and outstanding ornamental and growth characteristics. These are the first interspecific hybrid hemlocks to be introduced to the horticultural trade and represent new strategies for managing HWA in landscape settings.

Both "Traveler" and "Crossroad" are hardy in US Department of Agriculture (USDA; 2012) Zones 6 and 7 and will perform well in moist, well-drained soil in full sun to partial shade. Like the parent species, they are tolerant of shade and so will perform in the landscape even as an understory tree.

These cultivars can be clonally propagated by cuttings taken in December or January or in early summer before the second flush of growth. Rooting occurs slowly over 8 to 24 weeks. All propagules have been observed to be identical to the original parent plant in all distinguishing characteristics. Rooted cuttings transplant well from containers into the landscape.

The genetic material of these cultivars has been deposited in the National Plant Germplasm System (USDA 2022), where it will be available for research purposes, including the development and commercialization of new cultivars. The US National Arboretum does not have stock plants available for general distribution.

'Traveler' is protected by a US Plant Patent (US PP32,784 P2) and will be available through licensed wholesale and retail nurseries as early as 2024. Inquiries about licensing opportunities may be made to the corresponding author. 'Crossroad' is not patented; limited quantities can be requested through the National Plant Germplasm System (USDA 2022).

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The work is [published](#) in the journal *HortScience*.

More information: Susan Bentz et al, Tsuga 'Traveler' and 'Crossroad'—The First Adelgid-resistant Interspecific Hemlock Hybrids, *HortScience* (2023). [DOI: 10.21273/HORTSCI16918-22](https://doi.org/10.21273/HORTSCI16918-22)

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