

Chitalpa: New Advances in a Rare Intergeneric Hybrid

Thomas G. Ranney, Ph.D., JC Raulston Distinguished Professor, Department of Horticultural Science,
Mountain Hort. Crops Res. & Ext. Center, North Carolina State University

With 104 genera and upwards of 800 species, the Bignoniaceae includes an array of spectacular flowering trees, shrubs and vines. In more tropical regions, Jacaranda (*Jacaranda mimosifolia*), Trumpet Trees (*Tabebuia spp.*) and the African Tulip Tree (*Spathodea campanulata*) represent some of the most widely planted and economically important flowering trees grown globally. In temperate regions, we are more familiar with Cross Vines (*Bignonia capreolata*); Trumpet Vines (*Campsis spp.*); Trumpet Bushes (*Tecoma spp.*); and two distinct and closely related genera, Catalpa (*Catalpa spp.*) and Desert Willow (*Chilopsis linearis*).

The genus *Catalpa* includes eight species with broad distribution spanning Asia and the Caribbean, and two species in North America. Commonly planted in the Midwestern United States, Catalpas are recognized as medium to large trees with a spreading form and large, showy, trumpet-shaped flowers.



Fig. 2. El Niño® Desert Orchid (×*Chitalpa tashkentensis* 'NCXC1' USPPAF).
(Photo credit: T.G. Ranney).



Fig. 1. Dr. Richard Olsen conducting *Chitalpa* pollinations in 2004 during his Ph.D. graduate program at NC State. (Photo credit: T.G. Ranney).

The U.S. champion Northern Catalpa (*Catalpa speciosa*), located in Lawrence County, Ohio, has a height and spread of 71 feet and a trunk circumference of 274 inches — so some of them can get big! Depending on the species, some *Catalpa* are quite cold hardy, including Northern Catalpa, which shrugs off -40 F (USDA Zone 4). Desert Willow is more limited in size and diversity, with only one species, *Chilopsis linearis*, native to the Southwestern U.S. (USDA Zone 7 and warmer), typically maxing out at around 18-25 feet in height.

Combining the smaller stature of Desert Willow with the cold hardiness and larger flowers of *Catalpa* is an appealing concept. Nikolai Rusanov of the Uzbek Academy of Sciences Botanical Garden in Tashkent, Uzbekistan, set out to do just that more than 60 years ago. Although it's not an easy hybrid to make, since this is an unusual intergeneric cross, he succeeded in creating the first ×*Chitalpa* in 1964. Two of these cultivars made their way to the U.S.: 'Pink Dawn,' which is smaller and has light pink flowers, and 'Morning Cloud,' which is larger with pale pink/white flowers. ×*Chitalpa* 'Minsum' Summer Bells® is a more recent introduction that has a pink flower color similar



Fig. 3. El Niño® Desert Orchid (*×Chitalpa tashkentensis* 'NCXC1' USPPAF). (Photo credit: T.G. Ranney).

to 'Pink Dawn.' Although these initial introductions were definite proofs of concept and were respectable cultivars, they just didn't measure up to other small flowering trees and never gained widespread popularity.

Here at North Carolina State University's Mountain Crop Improvement Lab, we started breeding *×Chitalpa* back in the early 2000s to see if we could make further improvements to bring these hybrids into the horticultural mainstream. One of our former graduate students, Richard Olsen (now director of the U.S. National Arboretum), initially led the effort as part of his Ph.D. research. This work included screening parents and breeding lines for resistance to powdery mildew (*Erysiphe elevata*) and *Catalpa* Sphinx Larvae (*Ceratomia catalpae*), using embryo-rescue and chromosome-doubling techniques to facilitate hybridization, ultimately leading to the development of improved hybrids.

Tree breeding takes time, however. After evaluating hundreds of hybrids for decades, we recently selected and introduced El Niño® Desert Orchid (*×Chitalpa tashkentensis* 'NCXC1' USPPAF). Considering that *Chitalpa* isn't much of a marketing name, the folks at Spring Meadow Nursery settled on "Desert Orchid" as a more appealing and marketable common name. El Niño® is a sterile hybrid between *Chilopsis linearis* 'Bubba' and *Catalpa ×galleana* (*C. ovata* × *C. speciosa*) that was completed in 2005, after about 19 years in the making. The



Fig. 4. Joel Mowrey, former research Specialist at NC State with El Niño® Desert Orchid (*×Chitalpa tashkentensis* 'NCXC1' USPPAF). (Photo credit: T.G. Ranney).

result is rather impressive: a small flowering tree with showy, fragrant, purple flowers that resemble orchids. For us, the height is about 6 feet after 5 years but will probably top out around 18-20 feet. Hardiness is at least USDA Zone 6 (we are in the process of testing it in colder areas). It also thrives in the Deep South. Colleagues at Louisiana State University's Hammond Research Station, where they had extreme heat and drought last summer, recently wrote: "It's like this plant is living in an alternate universe. Incredible establishment, vigor, leaf



Fig. 6. *×Chitalpa tashkentensis* 'Strawberry Moon.' (Photo credit: R.T. Olsen).



Fig. 5. *×Chitalpa tashkentensis* 'Strawberry Moon.' (Photo credit: R.T. Olsen).

quality, bloom appearance and fragrance, and pest resistance. Plants are 5-6 feet tall already from a one-gallon [container]. Exceptional heat tolerance." They added: "El Nino. Wow — what an incredible plant this is, and one I never even thought could have existed! It generated lots of interest at field day." Wholesale liners are available from Spring Meadow Nursery of Grand Haven, Michigan.

After Olsen headed off to the U.S. National Arboretum, he continued working on breeding *Chitalpa*. Crossing a unique and fertile tetraploid form of *×Chitalpa tashkentensis* 'Pink Dawn' with a diploid, powdery mildew-tolerant *Catalpa ovata* resulted in an attractive triploid hybrid tree now named 'Strawberry Moon.' Compared to El Niño®, 'Strawberry Moon' is a much larger tree that can reach 39 feet tall in 12 years. Flowers are a nice dark pink, and since it's a triploid, there isn't much, if any, of the bean-like fruit set. Liners are available from various nurseries, including J. Frank Schmidt & Son Co. of Boring, Oregon. You can contact Dr. Margaret Pooler (Margaret.Pooler@usda.gov) for other availability (www.usna.usda.gov/assets/images/as_pdf_image/Chitalpa_Strawberry_Moon_fact_sheet.pdf).

Time will tell how these new introductions will perform in the varied climates and markets around the world. If you give them a try, let us know what you think.