Research in ornamental horticulture—a broad-based approach by the U.S. National Arboretum

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U.S. National Arboretum
Washington, D.C.
The U.S. National Arboretum
446-acre living museum in Washington, D.C.
Plant Collections
Education and Visitor Services:

- Programs, events
- Internships
- Maps, signs, displays
- Special exhibits
Research at the National Arboretum:

Conducting broad-based, multi-disciplinary research for the floral and nursery industries.
Curation of Woody Landscape Plant Germplasm
Taxonomy of Ornamental Plants
Turfgrass Research
Detection of pathogens in ornamental plants
Development of methods of pest and disease control using natural products
Improvement of field and container nursery crop production

Donna Fare
McMinnville, TN
Developing new woody landscape plants
Long-term programs:

Frank Santamour  Denny Townsend  Richard Olsen

Tree Breeding
Don Egolf  Bill Ackerman  Margaret Pooler  Sandy Reed

Shrub Breeding
Complementary Research:

Alan Whittemore  Kevin Conrad  Mark Roh

Taxonomy and Germplasm
Complementary Research:

Beltsville Agricultural Research Center
How do we develop new plants?
Steps in Cultivar Development

- Hybridizations
- Evaluation/testing of progeny
- Release of cultivar
Hybridization
Biotechnology
Embryo rescue

Hydrangea macrophylla

Hybrid

Hydrangea paniculata
Chromosome manipulation to create sterile triploid plants:

\[ 2X \times 4X = 3X \]
Evaluation
Molecular markers

- 5594IK4 [Progeny]
- 5594IK5 [Progeny]
- 55I p1 [Female parent]
- 55K p2 [Male parent]
The U.S. National Arboretum presents 'First Lady', a new, classically elegant, hybrid flowering cherry. This charming, upright tree warms the days of early spring with a multitude of nodding, dark rose-pink flowers, a vibrant counterpoint to the soft colors of other flowering cherries.

**Botanical Name:** Prunus 'First Lady'

**Foliage:** Glossy, heavy-textured, large dark green leaves.

**Flowers:** Abundant, dark rose-pink, single, campanulate, semi-pendulous flowers open in late March in the Washington, DC area, approximately the same time as the female parent Prunus x incisa 'Okame'. Dark red calyxes remain ornamental for several weeks after flower petals have fallen, giving the illusion of bloom.

**Fruit:** A drupe. Ovoid, ¾ inch long, dark red at maturity. Readily eaten by birds.

**Description:** Height and Width: 27 feet tall with a crown spread of 34 feet wide at 20 years. Habit: Strongly upright, almost columnar.

**Significance:** ‘First Lady’ represents the combination of many desirable elements of both parents in a unique form. The abundant flowers and hardiness of the female parent, ’Okame’, combine with the excellent dark green foliage and deep pink to near red flower color of the pollen parent, Prunus incisa, to produce a fast-growing, upright tree that retains its columnar habit with age.

**Cultivation:** ‘First Lady’ grows and flowers well in full sun in well-drained soils of various types. Requires no pruning to maintain its upright shape.

**Propagation:** Most Commercial propagation is by budding or grafting onto compatible rootstocks (P. × subhirtella, P. incisa). Softwood cuttings can be taken in winter, plant tissue cultures has been successful. Cutting propagation from mature plants is challenging.

**Landscape Use:** Specimen plant, groupings in residential, park, or public areas, highway beautification projects, street plantings, or in areas where a narrow-crowned tree is desirable.

**Availability:** Limited wholesale availability in 2004. For source list of cooperating wholesale nurseries, contact Dr. Margaret Peder, U.S. National Arboretum, 3501 New York Ave., NE, Washington, DC 20002.
What’s in the pipeline and what have we introduced lately?
Callicarpa dichotoma ‘Duet’
Capsicum annuum
‘Black Pearl’
Celtis (hackberry)
Cercis chinensis ‘Don Egolf’
Cercis hybrids
xCitalpa

Catalpa  x  Chilopsis  =  xChitalpa
Corylopsis (winterhazel)
Corylopsis sinensis var. calvescens

x

Corylopsis himalayana
Hydrangea breeding

Sandy Reed
Lagerstroemia hybrids

‘Arapaho’

‘Cheyenne’
Lagerstroemia ‘Pocomoke’
Photinia selections
Prunus hybrids

‘Dream Catcher’

‘First Lady’
Syringa
‘Betsy Ross’
Syringa ‘Declaration’
Syringa ‘Old Glory’
*Tsuga* (hemlock) hybrids
Ulmus americana
‘Jefferson’
Ulmus americana
‘Valley Forge’ and ‘New Harmony’
Viburnum ‘Nantucket’
For more information on these plants or our research, visit the web site at:

www.usna.usda.gov