

takes the other. Both UPS and FedEx computers are connected online with a modem so they have constant knowledge of our activity at their central office.

The next morning all acknowledgments from the previous day are taken to accounts receivable where the orders are double-checked for errors or backorders. The total freight bill is also totaled at this time and the invoices are prepared and sent to the customers. We also have software that allows us to track packages. It can tell you where packages were scanned and also proof of delivery.

A Tour of Your National Arboretum and Its Latest Cultivar Releases

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THE U.S. NATIONAL ARBORETUM

The U.S. National Arboretum, established by an Act of Congress in 1927, is a research facility and living museum in northeast Washington, DC. Administered by the U.S. Department of Agriculture, the mission of the Arboretum is to conduct research, provide education, and conserve and display trees, shrubs, flowers, and other plants to enhance the environment. The Arboretum is a unique federal institution linked by partnerships to many governmental agencies, the scientific community, other arboreta and botanic gardens, and various private-sector groups. As a national center for public education, the Arboretum welcomes over 600,000 visitors annually to a stimulating and aesthetically pleasing environment.

Located on 185 ha (446 acres), the National Arboretum has plant collections, historic sites, and special attractions that appeal to visitors year-round. These attractions include separate landscaped collections of Asian plants, azaleas, conifers, dogwoods, hollies and magnolias, boxwood, native plants, perennials, and state trees. Other attractions include aquatic plants, the Capitol Columns, Friendship Garden, National Herb Garden, National Bonsai and Penjing Museum, National Herbarium, and the Washington Youth Garden.

Gardens, Education, and Research. The approximately 110 full-time staff and over 200 volunteers at the National Arboretum work primarily in either the Gardens Unit, the Education Unit, or the Research Unit. The Gardens Unit is responsible for maintaining most of the display collections and attractions mentioned above. The Education Unit oversees tours for groups, special exhibits, docent programs, discovery stations, interpretive signs, the Washington Youth Garden, and media presentations. The Research Unit, with labs in Beltsville, MD, Glenn Dale, MD, McMinnville, TN, and Washington, DC, conducts wide-ranging basic and applied research on trees, shrubs, and floral plants in areas as diverse as genetics, pathology, taxonomy, entomology, and physiology. Overall objectives are to develop new technologies for the floral and nursery industries, breed new plants with superior characteristics, and develop new methods of disease detection and control.

Some of the more recent accomplishments of the research unit include: development of new floral plants including *Ornithogalum*, *Estoma*, *Clematis*, and *Curcuma*; development of improved landscape plants, including red maples, disease-tolerant American elms, and miniature hybrid crapemyrtles; discovery and application of natural plant compounds made from neem oil for insect and disease control; and development of genetically engineered virus-resistant plants.

Cultivars from the National Arboretum. Since it was established 72 years ago, the National Arboretum has released over 650 new plant cultivars, including the Glenn Dale hybrid azaleas, cold-hardy camellias, disease-resistant crapemyrtles, a wide variety of well adapted viburnums, pest-tolerant red maples, Dutch elm disease-tolerant American elms, New Guinea impatiens, and dwarf Easter lilies. Some of these cultivars are the result of years of cross breeding and selection, while others are selections from plants or seeds received from other locations in the U.S. and abroad. Although many of the cultivars released over two decades ago continue to be propagated and sold by the hundreds of thousands today, the purpose of this section is to introduce you to some of the newer cultivars developed at the U.S. National Arboretum. Unless noted, all of these cultivars can be propagated readily from softwood or semihardwood cuttings following standard practices for the genus and species.

***Acer rubrum* 'Brandywine'**. (USDA Zones 4 to 8). Selected for its stunning, long-lasting fall color which turns from red to a brilliant red-purple, 'Brandywine' also has a significant level of tolerance to the potato leafhopper. With a height of 7.6 m (25 ft) and a 3.7 m (12 ft) crown spread after 12 years of growth, 'Brandywine' is an excellent choice for lawn, street, highway, or park plantings, and as a shade tree for residential sites. It is a male selection, so produces no fruit and therefore no nuisance seedlings. Released in 1994, 'Brandywine' is expected to be available in retail nurseries after 2001.

***Acer rubrum* 'New World'**. (USDA Zones 4 to 8). Selected from a group of seedlings grown from seed collected in Maine, 'New World' has a unique and desirable crown structure, with lower branches upright, and higher branches flaring outward, creating a shape similar to a small American elm. The foliage is highly tolerant to the potato leafhopper, and turns an attractive orange-red in the fall. Like 'Brandywine', 'New World' is a male selection and is ideal for city street or landscape planting. It was released in 1997 and liners will be distributed to propagating wholesale nurseries this fall for expected retail availability after 2003.

***Acer rubrum* 'Red Rocket'**. (USDA Zones 3 to 8). A male selection from a group of seedlings grown from seed collected in Minnesota, 'Red Rocket' is an extremely cold-hardy selection with superior tolerance to the potato leafhopper. Growth rate is slower in warmer zones, but results in a strongly columnar crown filled with a dense canopy of large leaves that show spectacular red autumn color. Such a habit makes it effective as a windbreak or as a living screen, as well as a specimen tree. 'Red Rocket' was released in 1997, and is currently being propagated by wholesale nurseries for expected availability after 2002.

***Hemerocallis* 'Chesapeake Sunset'**. (To USDA Zone 5). Noteworthy for its striking scarlet red flower color, this daylily cultivar combines a short, 20 cm (8 inch) stem with masses of 20 or more buds per plant. Single flowers, approximately 6 cm (2.5 inches) in diameter, open in masses to create a stunning display throughout

early to mid summer. 'Chesapeake Sunset' daylily was registered with the American Hemerocallis Society in 1996, and is being produced by vegetative propagation of fans or by tissue culture under a licensing agreement with commercial nurseries. Finished plants will be available through retail nurseries in spring 2001.

***Lagerstroemia fauriei* 'Kiowa'**. (To USDA Zone 7). Received in the 1960s in a shipment of cuttings from Japan, 'Kiowa' was selected for its brilliant exfoliating cinnamon-brown bark, large white-flowered inflorescences, high tolerance to powdery mildew, and overall vigor. Deciduous, dark green elliptical leaves turn yellow in the fall. When planted in full sun in a heavy loam soil, this multi-stemmed tree will reach a height of 7.6 m (25 ft) or more, making it well suited as a specimen tree or for planting in wide expanses of parks, streets, or highways. Although 'Kiowa' was released in 1994, it has a reputation of being difficult to propagate, and is therefore available from relatively few wholesale and retail nurseries.

***Lagerstroemia* 'Chickasaw'**. (USDA Zone 7b). The first in a series of miniature hybrid crapemyrtles released from the U.S. National Arboretum, 'Chickasaw' reaches a height of only 0.5 m (20 inches) and a width of 0.7 m (26 inches) after 7 years in container culture. The habit is a densely branched, compact mound with fine-textured, glossy dark green deciduous foliage that is highly tolerant to powdery mildew. Pink-lavender flowers emerge in mid to late summer and persist until frost. 'Chickasaw' is adaptable to the same cultural conditions as other crapemyrtle cultivars, and thrives in full sun in a heavy loam soil. Because of its unique habit, it is well-suited as a small foundation or border plant, mass plantings in beds in parks or public areas, as a specimen plant in rock gardens or terraces, or as a patio container plant. Released in 1997, 'Chickasaw' is currently available through wholesale and a limited number of retail nurseries.

***Lagerstroemia* 'Pocomoke'**. (USDA Zone 7b). The second miniature hybrid crapemyrtle from the U.S. National Arboretum, 'Pocomoke' is similar in habit to 'Chickasaw', but slightly faster growing and larger at maturity. Flowers are deep rose pink. The small glossy foliage emerges maroon, matures to a deep dark green, and ends the season with a bronze-red fall color. As with 'Chickasaw', the foliage, ornamental flower buds, and flowers are highly tolerant of powdery mildew. Released in 1998, 'Pocomoke' will be available through wholesale and retail nurseries in 2000-2001.

***Ornithogalum* 'Chesapeake Blaze', 'Chesapeake Sunburst', and 'Chesapeake Sunset'**. (USDA Zone 9; indoor pot plant). Unlike the popular cut flower star-of-Bethlehem, these three new hybrid cultivars were developed for container culture. Dense clusters of bright orange ('Chesapeake Blaze'), bright yellow ('Chesapeake Sunburst'), or deep orange ('Chesapeake Sunset') flowers are displayed on short 25 to 30 cm (10 to 12 inch) thick flower stems and last for months. Bulbs produce 2 to 3 flower stems in succession, with individual flower stems blooming for 3 to 4 weeks. These *Ornithogalums* were released in 1998, and are being produced by vegetative propagation of bulbs or by tissue culture under a licensing agreement with commercial nurseries. Finished plants will be available through retail nurseries in spring 2000.

***Prunus* 'Dream Catcher'**. (USDA Zones 6-8). Released in 1999, 'Dream Catcher' is an initial release from the flowering cherry genetic improvement program at the U.S. National Arboretum. It is well suited to nursery production and offers year

round ornamental features, high insect and disease tolerance, combined with ease of propagation. Large, medium pink single flowers emerge in late March, approximately 1 week after the parent, *Prunus* 'Okame', blooms. With a height and spread of 7.6 m (25 ft) by 4.6 m (15 ft) and an upright vase-shaped habit, 'Dream Catcher' may be used as a specimen plant, in group plantings, or as a street tree. Limited quantities of finished trees are currently available from wholesale distributors.

***Thuja* 'Green Giant' (*T. standishii* × *T. plicata*).** (USDA Zones 5 to 7). This large evergreen arborvitae has been acclaimed by nursery professionals for its tolerance to significant disease and pest problems, as well as its adaptability to a wide range of soil and hardiness zones. Received in 1967 from Denmark at the U.S. National Arboretum, 'Green Giant' was selected for its vigorous, pyramidal evergreen growth which holds its green color in winter, dense rich green scale-like foliage in flattened sprays, and overall adaptability. It is suitable as an evergreen screen or specimen plant, and is an excellent substitute for Leyland cypress. Plants are readily available from many wholesale and some retail nurseries.

***Ulmus americana* 'Valley Forge' and 'New Harmony'.** (USDA Zones 5 to 7). Selected after 20 years of research, both 'Valley Forge' and 'New Harmony' combine good levels of tolerance to Dutch elm disease with the classic American elm shape and the adaptability to poor soil conditions typical of the species. Both have a height and crown spread of approximately 21 m (70 ft) at maturity, and grow rapidly once established. 'Valley Forge' has an upright, arching, broadly vase-shaped habit with a full, dense leaf canopy. 'New Harmony' has a broadly V-shaped crown with limbs terminating in numerous slender, often drooping branches. Because of their tolerance to deicing salts, drought, poor soil conditions, air pollution, and a range of soil pH, these two cultivars are perfectly suited to urban and suburban settings. Released in 1995, both cultivars should be available to retail nurseries by 2003.

***Viburnum* × *burkwoodii* 'Conoy'.** (USDA Zones 5b to 8). Recognized as one of the late Don Egolf's best viburnums, 'Conoy' is a compact plant with fine-textured dark green foliage, fragrant white flowers, long-lasting red fruits, and evergreen leaves to Zone 7. At maturity it reaches 1.2 to 1.5 m (4 to 5 ft) tall and 2.1 to 2.4 m (7 to 8 ft) wide, but is amenable to pruning. An excellent choice for a specimen plant, as a low to medium natural or sheared hedge, or as a foundation plant, it is easily cultivated under diverse climatic and soil conditions, including drier soils, and prefers full sun to partial shade. Released in 1988, 'Conoy' is readily available from mail-order firms, retail, and wholesale nurseries.

***Viburnum rhytidophyllum* 'Cree'.** (USDA Zone 5 to 8). A seedling selection from open-pollinated seed collected in China, 'Cree' is a leatherleaf viburnum that was selected for its superior dark evergreen foliage, excellent cold hardiness, and good flowering and fruiting. A spreading, densely branching habit makes this plant suitable as a specimen plant, as a background in the annual or perennial garden, or as a low screen. 'Cree' is adaptable to the same cultural conditions as other *V. rhytidophyllum* plants, and suffers from no serious disease or pest problems. Released in 1994, 'Cree' is available from mail-order firms, retail, and wholesale nurseries.

For more information on the U.S. National Arboretum, its research and education programs, and its cultivar releases, please visit the web site (www.ars-grin.gov/na).