Exciting Developments in the World of *Cornus*©

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An attractive harbinger of spring, our native eastern flowering dogwood, *Cornus florida*, is one of the most highly prized species of small flowering trees. However, in many areas where it is grown, the plants fail to prosper due to their high susceptibility to the ravages of the common dogwood borer, *Synanthedon scitula*. Plants of *C. kousa*, native to China, Japan, and Korea, are highly resistant to this insect pest but became popular rather slowly in the United States as the period of floral display is about 1 month later than that of plants of *C. florida*.

In the Woody Ornamentals Breeding Program at Cook College/NJAES at Rutgers University, interspecific hybridization of *C. kousa* × *C. florida* in 1970 resulted in the introduction of six F1 hybrids, all of which provide an attractive floral display during a time period that is intermediate to that of the two parental species. All six hybrids are very vigorous, exhibit high resistance to the common dogwood borer and to *Discula destructiva,* the incitant of dogwood anthracnose, and exhibit moderate to high resistance to the fungal incitants of powdery mildew. Being highly cross-sterile, as well as self-incompatible, the plants are very floriferous every year since the nutritional drain of a heavy crop of seed that causes many cross-fertile dogwoods to set few flower buds in alternate years does not occur. The trademark names of these dogwood hybrids are Aurora®, Celestial®, Constellation®, Stardust®, Stellar Pink®, Ruth Ellen®, and are marketed as members of Rutgers' Stellar® series of hybrid dogwood (*C. kousa* × *C. florida*).

Dogwood anthracnose was observed first in the mid-1970s in Connecticut and New York and by the late l980s was ravaging native stands of *C. florida* throughout its native range. But, by the mid to late 1990s, the severity of this disease declined in nonmountainous areas and in recent years has been displaced as the major disease of *C. florida* by the sudden onset of severe epidemics of powdery mildew. Fortuitously, the Stellar dogwoods, with their high levels of insect and disease resistance, reached the marketplace at the right time. Now a seventh member of the Stellar series has been introduced, namely, *Cornus* KF1-1, Saturn™ hybrid dogwood PPAF. This clone was given a high rating at the time the first six cultivars were introduced, but was held back on the advice of some who thought it might be counterproductive to introduce so many new dogwoods to commerce at one time. However, after 35 years of being grown under conditions of very low maintenance, including never having been sprayed with any chemical pesticide, the original plant of Saturn hybrid dogwood is performing well. Under similar growing conditions, most plants of *C. florida* would have died years ago. Hence, the decision to add Saturn hybrid dogwood to our list of Stellar hybrids.

As was the case with the first six cultivars in the Stellar series, plants of Saturn hybrid dogwood are very vigorous, highly floriferous but cross-sterile and self-incompatible, exhibit high resistance to the incitants of dogwood anthracnose and powdery mildew, and are fully winter hardy in USDA Hardiness Map Zone 6a [-10 °F (-23.3 °C)]. In central New Jersey, the period of floral display of plants in the Stellar series is intermediate to that of plants of the parent species: i.e., the periods

Figure 1. Original plant of Venus™ hybrid dogwood in flower.

Figure 2. Close-up of the flower of Venus™ hybrid dogwood in flower.

typically being 29 April to 14 May for plants of *C. florida*, 14 to 29 May for the hybrids, and 28 May through late June and into July for *C. kousa*.

The second new release from Rutgers University is *C. florida* 'Rutnut', Red Pygmy® flowering dogwood, PPAF. This introduction is the first truly dwarf, red-bracted cultivar of *C. florida*, the floral bracts of which are as dark red as those of *C. florida* 'Cherokee Chief'. The plants appear to be slightly more vigorous than the white-

bracted cultivar, 'Pygmy', that has been in the trade for many years. The mature size, of course, is not known as yet, but we expect the typical size in a landscape setting will not exceed 2.3 m (7 ft tall) and 2.59 m (8½ ft in width). Typically the plants increase in height about 10 cm (4 inches) a year.

Mr. Don Shadow of Shadow Nursery, Winchester, Tennessee, reports that the plants of Red Pygmy flowering dogwood grown at his nursery have been precocious in flowering. In his experience, 1-year budded liners 15–20 cm (6–8 inches) tall bare-rooted in the fall and potted in one-gallon containers, were 30–35 cm (12–14 inches) tall with as many as 8 to 12 flower buds set at the end of the next growing season. Mr. Shadow reports that he has seen no evidence of dogwood anthracnose on plants of Red Pygmy flowering dogwood but did observe a little powdery mildew on them in 2005. He noted that powdery mildew was very severe on many cultivars of *C. florida* during the 2005 growing season.

The next two *Cornus* hybrids recently introduced by Rutgers University resulted from a program of interspecific hybridization of plants of *C. kousa* and *C. nuttallii*, initiated in May 1973 by the senior author, and are the first-ever reported hybrids of these two species. *C. nuttallii* is native to limited areas of the Pacific Northwest and Western United States. With some plants reaching a height of 21.3 m (70 ft) in areas of the Columbia River Gorge, C. *nuttallii* is the giant of the large-bracted dogwoods. However, plants of this species seldom prosper outside the limited areas to which the species is indigenous. In the absence of any report that plants of *C. kousa* and *C. nuttallii* were cross-fertile, the challenge was to produce interspecific hybrids that exhibited the desirable traits of both species and would grow well over a wide range of soil and climatic conditions.

Numerous seedlings resulting from crosses of *C. kousa* × *C. nuttallii* germinated in 1974 and were containerized for 1 year prior to field planting in Spring 1975. Many of the plants were winter-killed during the first winter in the field. Others grew vigorously in subsequent years but suffered bark split on the south and/or southwest side of the trunk during cold winters. In spite of this localized damage, plus the fact that the trees received minimal care (grown in sod, never irrigated, and never sprayed with chemical pesticides), about 20 plants were evaluated for 15 to 25 years. Most of the plants flowered after 7 to 9 years, and on 2 June 1983, a superior F1 hybrid of *C. kousa* var. *chinensis* × *C. nuttallii* 'Gold Spot' was hybridized with a plant of *C. kousa* 'Rosea'. Subsequently, the "best" seedling among the progeny from this cross was propagated and distributed to cooperators in New Jersey, Tennessee, and Oregon for further evaluation. That cultivar now has plant patent applied for status and is being marketed as KN30-8, Venus™ hybrid dogwood. Plants of this hybrid are distinguished by their exceptional vigor, excellent dark green leaves, and the largest white floral bracts the authors have ever seen on a dogwood plant (Figs. 1 and 2). At 20 years of age, the original seedling was 5.48 m (18 ft) tall with a spread of 6.55 m (21.5 ft). The original seedling has been field tested for 19 years in central New Jersey (USDA Zone 6a) with no observable winter injury and has shown good tolerance of drought conditions and high resistance to the incitants of powdery mildew and dogwood anthracnose. Venus hybrid dogwood has been introduced as the first member of Rutgers' Jersey Star™ series of hybrid dogwood (*C. kousa* × *C. nuttallii*).

Cornus KN4-43, Starlight® Jersey Star® series dogwood, PPAF has been introduced as the second member of our Jersey Star® series. This cultivar originated as

an F1 hybrid resulting from a cross of *C. kousa* 'Simpson No. 1' × *C. nuttallii* 'Gold Spot'. The original plant is extremely vigorous and dense, having reached a height of 8.83 m (29 ft) with a columnar spread of 7.07 m (23.25 ft) in 30 years. Plants of Starlight hybrid dogwood are vegetatively winter-hardy in USDA Zone 6a but are flower bud hardy only to USDA Zone 7b [+5 °F (-15 °C)]. The plants have shown high resistance to the major disease and insect pests of *C. kousa* and *C. nuttallii*, exhibit attractive, dark green leaves, and have been found to be floriferous in Winchester, Tennessee, and Boring, Oregon. Plants of Starlight hybrid dogwood have not been extensively tested in the Mid-Atlantic and south-eastern states, but their performance in these and other areas of the United States will be forthcoming soon.

Developments in Production and Use of Trees, Shrubs, and Perennials©

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The nursery trade currently is faced with some problems in The Netherlands. These include:

1) There are currently too many taxa of plants to choose from. This is creating problems for both nurseries and gardeners. This has resulted from:
   a) Too many NEW NEW NEW plants.
   b) Too many old (and/or unknown) plants.

Therefore, this has resulted in the need to distinguish products by marketing tools: labels, pots, and trays.

2) Pests and diseases.
   a) Problems in nurseries.
   b) Problems in urban and rural areas.

What needs to happen: we need to spread the risks by diversifying production and plant a wider range of plants.

3) Trends in gardening are causing problems and include the following:
   a) Less-is-more garden design with use of fewer plants (are perennials "out"?).
   b) Bringing inside living room outside: this has led to plants in pots with lots of hardware/furniture.
   c) Short-term gardening.
   d) Buying visually attractive plants only.

To overcome the above problems, consumers need more information on the wealth of plants to choose from. Suppliers of information include the following:

- The nursery trade itself.
- Inspection Service for Horticulture (NAK).
- For woody ornamentals and perennials: Royal Boskoop Horticultural Society (KVBC), which has been conducting trials for many years. The distribution of information is through Plant Publicity Holland.