

New and Improved Deciduous Magnolia Cultivars¹

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INTRODUCTION

Magnolias are prized worldwide for their spring flowers and have become some of the most widely planted flowering trees. Star magnolia (*Magnolia stellata*) and saucer magnolia (*M. ×soulangiana*) are two of the best known deciduous flowering magnolias, with star magnolia valued for its cold hardiness and saucer magnolia planted for its flowering display. However, thanks to breeders August Kehr, Philip Savage, Mark Jury, Todd Gresham, and many others, flowering magnolias today offer much more than the old star magnolia and saucer magnolia of yesteryear. Many new hybrids offer larger flowers, later blooming (so as to avoid frost damage), and a wide range of flower colors and plant sizes and habits. Particularly noteworthy are the Gresham hybrids and yellow-flowering hybrids.

GRESHAM HYBRID MAGNOLIAS

These remarkable hybrid magnolias are noted for producing large flowers up to 30.5 cm (12 inches) in diameter and flowering prolifically at an early age. Flowering typically occurs somewhat later than for saucer magnolia with colors ranging from deep purple-red to alabaster white. These hybrids develop into small to medium trees, and can be grown in U.S.D.A Hardiness Zones 6 to 8.

D. Todd Gresham began his magnolia breeding program in 1955 with the goal of combining the beautiful flower character, color, and size of *M. campbellii* with hardiness and early flowering age of *M. ×soulangiana*, *M. liliiflora*, and others. Out of the thousands of hybrids he produced, at least 35 have been named, and his hybrids continue to be selected and released over 30 years after his death.

Although they are still being evaluated, outstanding cultivars with landscape and commercial potential include 'Jon Jon' (creamy white with a reddish-purple blush at the base), 'Sayonara' (white), 'Pink Goblet' (light pink), 'Winelight' (white with a pink blush), 'Deep Purple Dream' (darkest red-purple of any cultivars in my planting), 'Full Eclipse' (tepals are red-purple outside and white inside), and 'Darrell Dean' (deep pink-red). I believe 'Jon Jon' holds the greatest commercial potential due to its 30.5 cm (12-inch) diameter flowers and a late blooming period that helps avoid frost damage. Flowers of 'Jon Jon' appear 1 to 3 weeks after those of saucer magnolia.

Gresham Hybrid magnolias may be propagated by budding, grafting, and cuttings, although cutting propagation is somewhat different than for other deciduous magnolias. Preliminary work evaluating rooting compound rates and stage of growth for taking cuttings has confirmed that late softwood/early semihardwood cuttings generally root best (Ellis, 1988). Cuttings from 10 to 15 cm (4 to 6 inch) length with two to four nodes were taken from branch terminals weekly from softwood through semihardwood stages (26 March to 24 April 2001, in north Florida). Leaves were removed except for the uppermost one or two, and the distal half of remaining leaves was cut to reduce transpirational leaf area and allow closer

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spacing of cuttings. Following guidelines of Ellis (1988) and local propagators, cuttings were treated with about a 3:1 ratio of K-IBA to K-NAA as a 5-sec quick dip. Rates of K-IBA:K-NAA tested were 5000:1500 ppm, 10,000:3000 ppm, and 15,000:4500 ppm. Cuttings were stuck in 5.7-cm (2.3-inch) rose pots (Lerio SR-225 plastic cups, Nursery Supplies Inc., Chambersburg, Pennsylvania) filled with a media of milled sphagnum peat and horticultural perlite (1:1, v/v) and placed under heavy mist (15 sec every 8 min) in an unshaded fiberglass greenhouse providing about 20% light exclusion. Regardless of the rooting compound rate, 80% to 100% of the cuttings rooted when cuttings were taken at a late softwood stage (about 1 April 2001, in north Florida and depending on the cultivar). Cuttings required 12 to 16 weeks before they were rooted well enough to be potted. New growth occurs a few weeks after potting and, in north Florida, plants may grow 0.9 m (3 ft) tall or more by the end of the growing season.

YELLOW-FLOWERING MAGNOLIAS

The hottest trend in magnolias today is yellow-flowering magnolias. Breeders are using the North American native cucumbertree, *M. acuminata*, as a source of yellow flower color, cold hardiness, and soil adaptability. The smaller stature of *M. acuminata* var. *subcordata* (sometimes called *M. cordata*) has been especially valued in breeding programs. Hybridization with *M. denudata*, *M. liliiflora*, and other species combine characters of yellow flower color and flower precociousness. Resulting hybrids range in size from small trees to large trees up to 80 feet tall. Some hybrids are reputed to be cold hardy into USDA Hardiness Zone 3 but most can be grown in U.S.D.A. Hardiness Zones 5 to 8 and possibly 9.

Results of these initial breeding efforts from the 1950s, 1960s and 1970s include such cultivars as 'Elizabeth' and 'Yellow Bird' (hybridized by Eva Marie Sperber), and 'Butterflies' (from Philip Savage). The more numerous "next generation" of yellow-flowering hybrids, now becoming available, often has a broader genetic base. Currently, Magnolia Society publications and various authors list about 35 cultivars claiming yellow or yellowish flowers (Callaway, 1994; Gardiner, 1989, rev. 2000; Magnolia Society Inc., 2002; Tubesing, 1996), although few are widely available.

Nineteen yellow flowering cultivars are planted at the University of Florida's North Florida Research and Education Center in Quincy, Florida (about 20 miles west of Tallahassee, 10 miles south of the Florida-Georgia state border, and 45 miles north of the Gulf of Mexico). They include 'Elizabeth', from Eva Marie Sperber, and 'Ivory Chalice', 'Golden Sun', and 'Legend' from the late Dr. David Leach. Several cultivars from breeder Philip Savage are planted: 'Gold Star', 'Maxine Merrill', 'Yellow Lantern', and 'Butterflies'. Also planted are a large number of cultivars from the late Dr. August Kehr of North Carolina: 'Gold Crown', 'Gold Cup', 'Golden Endeavor', 'Hot Flash', 'Solar Flair', 'Stellar Acclaim', 'Sunburst', 'Sundance', 'Sun Ray', 'Sun Spire', and 'Tranquility'. The purpose of the planting is to screen cultivars for good yellow flower color in U.S.D.A. Hardiness Zone 8b, with the ultimate goal of formally evaluating promising cultivars in a broader, regional evaluation project.

One of the greatest challenges or mysteries with yellow-flowering magnolias is the tendency of the yellow flower color to vary from year to year or not develop fully in certain climates and regions (e.g., the Coastal Plain of the southeast U.S.A.). There is evidence with saucer magnolia that warm winter temperatures improve flower

color while reducing flower size (Kanellos, 2001). Others believe bright sunlight and acidic soils reduce yellow flower color (Tessmer, 1998). In north Florida, 'Butterflies', 'Golden Sun' and 'Maxine Merrill' have consistently produced flowers with good yellow flower color, but it should be noted that most of Dr. Kehr's hybrids have not been established long enough for full evaluation.

Another challenge of yellow flowering magnolias is propagation. So far, propagation is primarily through budding, grafting, and tissue culture. *Magnolia acuminata* is difficult to root from cuttings, and many of its yellow-flowering progeny also carry this trait. Newer cultivars have a broader genetic base and hold some promise of easier propagation. I have tried rooting a small number of cultivars using the same regime as previously mentioned for the Gresham Hybrids (a 3 : 1 ratio of K-IBA to K-NAA in rates of 5000 : 1500 ppm, 10,000 : 3000 ppm, and 15,000 : 4500 ppm as a 5-sec quick dip, etc.). The small sizes of stock plants limited the number and quality of cuttings. However, rooting percentages in 2001 ranged from 50% to 100% for 'Hot Flash', 'Ivory Chalice', 'Tranquility', and 'Sun Ray'. Rooting of other cultivars was less than 40% ('Maxine Merrill', 'Yellow Lantern', 'Solar Flair', 'Golden Sun', and 'Golden Endeavor'). There was no apparent pattern in rooting responses to rates of rooting compounds. In my limited experience, semihardwood cuttings rooted better than softwood cuttings, and 16 weeks or more were needed before cuttings were rooted well enough to be potted. Future work will further explore propagation of yellow-flowering magnolias by cuttings.

CONCLUSIONS

Gresham hybrids and cultivars of yellow-flowering magnolias should be more widely planted to evaluate and determine the best cultivars for each region. Demand for these superior flowering magnolias will increase as they become more widely known and planted. The promising future for these magnolias will require growers to have better information about propagation, production and shipping while landscapers and consumers will need to learn about cultivars best suited for their region and cultivars' flowering characteristics and ultimate size and shape.

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