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‘Sunglow’ American Witchhazel

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The genus *Hamamelis* L. (Hamamelidaceae R. Br., the witchhazel family) is represented by about six species distributed across the temperate regions of North America and Asia (Wen and Shi, 1999; Leonard, 2006). Although as many as 15 species are reported (Wiesrma, 2017), such as *Hamamelis macrophylla* Pursh. and *Hamamelis mexicana* Standl., morphological and phylogenetic analysis support a monophyletic clade of *Hamamelis* with six species (Li et al., 2000). *Hamamelis* species are large shrubs or small trees bearing characteristically narrow, strap-like flower petals and capsulate fruit that co-occur with flower buds and flowers. North American species include *Hamamelis vernalis* Sarg. (vernal or Ozark witchhazel) which is found in the Ozark Mountains of Oklahoma, Missouri, and Arkansas and in Texas; *Hamamelis virginiana* L., widely distributed in rich but dry woodlands from southern Canada into the eastern and central United States; and *Hamamelis ovalis* S.W. Leonard (bigleaf witchhazel), a new species represented by a few populations in Mississippi and Alabama (Leonard, 2006). *Hamamelis vernalis* is smaller than *H. virginiana* and is grown as an ornamental plant in U.S. Department of Agriculture (USDA) hardiness Zones 3–8 (USDA, 2012). It flowers from December to March and has fragrant, orange-red flowers. *Hamamelis virginiana* is a medium to large shrub producing lemon-yellow flowers from October to December. *Hamamelis ovalis* is a large-leafed, creeping shrub producing orange-red flowers.

Asian *Hamamelis* species include *Hamamelis mollis* Oliv. (Chinese witchhazel), and *Hamamelis japonica* Sieb. and Zucc. (Japanese witchhazel). *Hamamelis mollis* is a small, rounded shrub native to Central China, whereas *H. japonica* is a low, spreading or vase-shaped shrub distributed throughout Japan. A superior *H. mollis* open-pollinated seedling observed by the Arnold Arboretum proved to be a hybrid between *H. mollis* and *H. japonica*, and in 1963 the clonal cultivar *Hamamelis ×intermedia* Rehder ‘Arnold Promise’ was registered (Gapinski, 2014). This hybrid combined the dense, yellow blossoms of *H. mollis* with the cold-hardiness, larger petals, and less winter leaf retention of *H. japonica*. Because of the variety of form and color, and a longer flowering period, most named *Hamamelis* cultivars are *Hamamelis ×intermedia*. Of ≈186 named cultivars, 106 are *Hamamelis ×intermedia*. *Hamamelis ×intermedia* ‘Arnold Promise’ remains a garden standard (Dirr, 2009); other notable *Hamamelis ×intermedia* cultivars include ‘Barmstedt Gold’, ‘Jelena’, ‘Primavera’, and ‘Westerstede’ (Gapinski, 2014).

Production and adoption of witchhazel is often hampered by production difficulties and a displeasing, irregular, open form of many cultivars in the landscape. Seedling rootstocks are used for bud grafting of desired cultivars, and rootstock selection is limited by the tendency of witchhazel to produce sprouts from the root crown collar. Other limitations of witchhazel, especially *H. virginiana*, include leggy, spreading forms, previous season’s foliage retention during flowering, and susceptibility to foliar diseases such as powdery mildew (*Podosphaera biuncinata* Cooke and Peck) and leaf blight (*Phyllostichta hamamelidis* Cooke *ex* G. Martin) in nursery production in the eastern and southeastern United States. Considerable improvement is warranted for quality and abundance of flower and the absence of foliage during the flowering period (Dirr, 2009). Ease of propagation and tolerance to foliar diseases in production would facilitate the adoption of an improved North American witchhazel.

Origin

‘Sunglow’ was identified in a seedling row of *H. virginiana* planted at Tennessee Technological University in 1988 after purchasing bare root dormant seedlings from Boyd Brothers Nursery. The seedling was noticed for its upright habit and dense blooming. In 2014, plants of this selection were sent for evaluation to nursery and university cooperators in Alabama, Georgia, Michigan, Minnesota, North Carolina, Ohio, Tennessee, and Texas. After evaluation in these locations, this selection was released in 2017 under the name ‘Sunglow’. ‘Sunglow’ is a release of the woody ornamental improvement program at the U.S. National Arboretum’s McMinnville, TN worksite, which is located at the Tennessee State University Otis L. Floyd Nursery Research Center.

Hamamelis virginiana ‘Sunglow’ was selected for its upright habit, large, profuse blooms, continued bloom after leaf drop, lack of root sprouts, foliar disease resistance, and ease of propagation. The cultivar name ‘Sunglow’ was registered in 2017 with the International Cultivar Registration Authority for woody plant genera (Stefan Lura, U.S. National Arboretum, 3501 New York Avenue, Washington, DC, 20002-1958) in accordance with the International Code of Nomenclature for Cultivated Plants (Brickell et al., 2009). A herbarium specimen has been deposited at the U.S. National Arboretum Herbarium as a cultivar standard.

Description

Hamamelis virginiana ‘Sunglow’ (NA 78644, PI 680618) is a deciduous upright shrub (Fig. 1) that reached 6.5 m high and 2.4 m wide after 12 years of growth in McMinnville, TN [USDA Hardiness Zone 7a (USDA, 2012); Waynesboro silt loam] under full sun conditions. Mature leaves are alternate, simple, obovate, up to 14.5 cm long and 9 cm wide, narrowed toward the base, coarsely dentate, and pubescent beneath. Foliage is medium-dark green [Royal Horticultural Society (RHS) 137A–B (Royal Horticultural Society, 2007)] on the adaxial leaf surface, changing to various shades of yellow (RHS 183A-C; 185A; 187A) in the fall. Flower buds form in late summer and become noticeable by early September. In McMinnville, TN, yellow fall leaf color develops in mid-October. By early November, leaves drop and yellow (RHS 157A–B) flowers are abundant and extremely showy for several weeks (Fig. 2). Inflorescences average 6.5 cm and about 1.8 cm in width.

Use and Culture

Hamamelis virginiana ‘Sunglow’ prefers moist, moderately fertile, well-drained soil. It is hardy in USDA hardiness Zones 4–8,

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although flowering may be reduced in Zone 4. Young plants can be tender and should be protected in Zones 4 and 5; stems and buds may be injured when winter temperatures reach –6.7 °C. This cultivar thrives in full sun and may be grown in full sun to shade.

American witchhazel is a native shrub covering much of the Eastern United States and is often used in naturalized situations, such as a shrub borders or against large buildings. This new release is well suited to a variety of landscape uses, including as background plantings in the shrub border, specimen plants, a deciduous hedge or screen, mass plantings in larger areas, or as part of a native plants display garden. The dense floral display, upright habit, small spread (only 2.4 m wide after 12 years), and lack of root sprouting makes 'Sunglow' an attractive choice for residential landscapes.

'Sunglow' plants are suitable for field and container production and will produce flowers on small plants the first growing season after propagation. Difficulty in rooting witchhazels may hinder their adoption by the nursery industry. There is very little information regarding rooting cuttings of American witchhazels. Dirr (2009) reported as low as 2% to 5% rooting success for *H. virginiana*, whereas Lamb (1976) reported rooting percentage of *H. virginiana* ranged 55% to 75% (based on substrate type) and *H. mollis* ranged 50% to 90%, with all cuttings receiving 8000 ppm indole-3-butyric acid (IBA).

A preliminary rooting study conducted at the Tennessee Technological University in Cookeville, TN, after the selection of the 'Sunglow' mother plant in 1992 yielded 90% to 100% rooting with 5000 and 10,000 mg·L^{-1} K–IBA (potassium salts of indole butyric acid; Sigma-Aldrich Chemical, St. Louis, MO) in a 50% peatmoss: 50% perlite substrate using 10 cm terminal cuttings collected on 15 Apr. (Fig. 3). Cuttings collected on 15 May and 15 June averaged 40% and 15% rooting success, whereas cuttings collected in July 15 did not root after 10 weeks. These data indicate softwood cuttings at 5000 to 10,000 mg·L^{-1} K–IBA root well, with a quick drop in rooting success thereafter. In a follow-up study, three species of witchhazels were evaluated in a rooted cutting experiment in McMinnville, TN in 2017. Stem cuttings were collected from mature (3-year old) container-grown stock plants of *H. virginiana* 'Sunglow', *H. vernalis* 'Amethyst', and *Hamamelis ×intermedia* 'Westerstede'. Stock plants were pruned for rejuvenation (Apr. 2017) and semihardwood stem cuttings were collected when stems would bend back but not snap [23 June ('Sunglow') and 6 July ('Amethyst' and 'Westerstede')]. Two-node terminal stem cuttings ≈7 cm in length were assigned an IBA (3-s basal dip; Dip'N Grow Liquid Rooting Concentrate; Dip'N Grow, Clackamas, OR) treatment of 0, 1000, 4000, or 8000 ppm IBA (25 cuttings per treatment per species). Cuttings were stuck in 72 cell flats (one cutting per cell; PROP-72-RD; T.O. Plastics, Inc., Clearwater, MN) filled with a one peatmoss: one perlite substrate amended (3.6 kg·m^{-3}) with Nutricote Total 18-6-8 (6 month formulation; Florikan LLC; Sarasota, FL). Rooting percentage was calculated 4.5 months after sticking cuttings. *Hamamelis virginiana* 'Sunglow' rooting percentage averaged 63% for all four treatments but IBA concentration had no effect on rooting percentage (Table 1). 'Amethyst' and 'Westerstede' averaged 47% and 21% rooting, respectively. The continued high percentage of rooting for 'Sunglow' in both the 1992 and 2017 experiments indicates this is a stable response which is not associated with relative juvenility of the clone in the 1992 experiment.

Fig. 1. Field-grown plant of *Hamamelis virginiana* 'Sunglow' displays yellow autumn foliage after leaves have dropped in McMinnville, TN, on 23 Oct. 2011.

Fig. 2. *Hamamelis virginiana* 'Sunglow' produces large, lemon-yellow inflorescences 6.5 cm long and about 1.8 cm wide in McMinnville, TN, on 17 Nov. 2016.

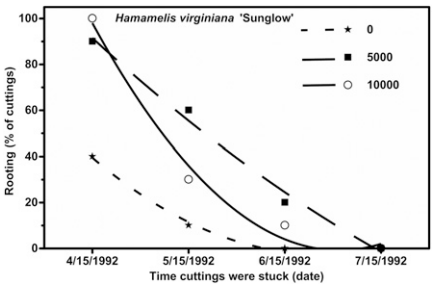

Fig. 3. Rooting percentages of *Hamamelis virginiana* 'Sunglow' stem cuttings taken at monthly intervals treated with 0, 5000, or 10,000 mg·L^{-1} of K–IBA after 10 weeks in 2-inch containers under intermittent mist in Cookeville, TN, $n = 10$.

Table 1. Mean rooting percentages (n = 25) of terminal semihardwood stem cuttings for three *Hamamelis* species using four concentrations of IBA (indole-3-butyric acid) collected between 23 June and 6 July 2017 in McMinnville, TN.

IBA ($mg \cdot L^{-1}$)	*Hamamelis virginiana* 'Sunglow'	*Hamamelis vernalis* 'Amethyst'	*Hamamelis ×intermedia* 'Westerstede'
0	64	36	12
1,000	60	56	4
4,000	64	48	28
8,000	64	48	40

In summary, *H. virginiana* 'Sunglow' was selected for its upright habit, large, profuse blooms, continued bloom after leaf drop, lack of root sprouts, foliar disease resistance, and ease of propagation. Softwood and semihardwood cuttings of 'Sunglow' rooted at an average rate of 80% and 63%, respectively, in preliminary studies. Lack of root sprouts ensures this cultivar may be used as a rootstock or own-rooted, which offers flexibility and appeal to growers. 'Sunglow' will be available to the retail market in 2019.

Availability

Like all woody ornamental plants released from the U.S. National Arboretum, 'Sunglow' is not patented so may be propagated and sold freely. Plants are available through wholesale, mail order, and a limited number of retail nurseries (source list available on request). The U.S. National Arboretum does not have stock plants of 'Sunglow' available for general distribution, but can provide a limited number of rooted cuttings to interested propagating nurseries.

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