

The American Rose Trials for Sustainability® (A.R.T.S.®) program expands into more US Köppen regions and adds more winning roses



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Background

The American Rose Trials for Sustainability® (A.R.T.S.®) program is a US rose trial initiated in 2012 by individuals representing multiple rose stakeholder groups including: industry, the scientific community, and public gardens (Hammond et al., 2019). Scientific rigor and regional awards are hallmarks of the program and help to achieve the program's mission: "To identify, through regional evaluation and testing under low-input conditions, the most disease- and pest-resistant, hardiest and most garden-worthy rose cultivars and to provide objective, accurate and reliable information about the cultivars tested for each region to industry professionals and the gardening public."

A.R.T.S.® was initiated, in part, to fill the void left from the 2012 disbanding of the industry-led All-America Rose Selection (AARS) program (started in 1938). The economic downturn in 2008 led to the bankruptcy of multiple member nurseries and contributed to the closure. Additionally, AARS winning roses no longer had the same sales clout in the marketplace. Compared to years past, today's consumers have elevated expectations for roses without the use of preventative pesticides. AARS did not stop preventatively using fungicides in their trials until close to the end of the program (2004 for shrub roses and 2008 for all other classes). Winning roses were above average compared to the other roses across the nation, even though in particular regions they may not have been the most adapted. It is difficult to find roses, or any plant, that do equally well everywhere.

A.R.T.S.® leverages tools and resources that its multiple stakeholders provide to strengthen the program and keep A.R.T.S.® relevant into the future. This should help buffer the challenges the program may face during seasons when any one stakeholder group may be struggling due to economics or other reasons.

Evaluation methodology of A.R.T.S.®

A new evaluation protocol was developed that reflected needs indicated by a wide range of people with a vested interest in roses (general consumers, landscapers, nurseries, public horticulturists, rose society members, etc.). There was very strong consensus in what people desired. Consistently it was indicated the trial should be no spray to help identify roses that are disease and insect resistant. Additionally, there was strong consensus for using low-input growing methods (e.g. no deadheading, moderate nutrition, etc.) and awards determined and communicated on a regional basis.

In 2014, eight trials were planted around the nation using established cultivars to fine-tune cultural management practices and the evaluation protocol. Trials are planted in a randomized complete block design and the same two standard cultivars are planted in each trial. The current standards have demonstrated strong national

performance and were selected from the 2014 trial group-Double Knock Out® ('RADtko') and Sunrise Sunset™ ('BALset'). Test roses that score equal to or greater than the average of the standards earn a regional award. The regional awards are called A.R.T.S.® Local Artist awards and roses earning four or more Local Artist awards are designated as A.R.T.S.® Master Roses due to their wider climatic adaptability.

The monthly evaluation protocol has 45% of the score reflecting subcomponents of the health and quality of the foliage, 42.5% on presentation and quality of the flowers, and 12.5% reflecting plant growth habit (10 point scale; Hammond et al., 2019). A comprehensive manual, complete with photographic examples, is provided to evaluators describing how to rate each trait. Evaluators may record their data while in the field using a mobile device or write the data on paper and enter it into the A.R.T.S.® database later. Data is collected monthly throughout the growing season in order to identify and reward those roses with consistently strong plant performance. Trials last two seasons and there are a limited number of traits that are also recorded once per season.

Regional climatic system used by A.R.T.S.® and trial sites

A.R.T.S.® defines its climate regions using the Köppen climate classification system, which is the preferred system used by ecologists (Fig. 1). This system not only takes into account temperature, but also seasonal precipitation and humidity. The goal of the program is to have two sites in each of the 9 Köppen climate regions in the continental United States. In 2018, five regions were represented with a strong presence throughout the eastern half of the US (regions Bwh, Dfa, Dfb, Cfa, Csa). For the 2019-planted trial, eight of the nine regions are represented (exception is the Aw region in the southern tip of Florida). All 2019-represented regions have two sites with the exception of the Bwh and Cfb regions having one site, and the Cfa has three. In order to help keep the trial size manageable, some sites within a region partner and alternate years for planting a new trial and removing an old trial.

The program is volunteer run, and the modest entry fees go to pay for supplies and services (e.g. website, awards, postage, etc.). Trial sites include public gardens, universities, and municipalities (Table 1). They volunteer to host trials because they value the mission of A.R.T.S.®, see value in the scientific rigor of the trial, and desire to benefit their regional stakeholders. A.R.T.S.® continues to look for additional trial site partners to have all regions represented, and provide flexibility for trial sites that would like to alternate hosting trials. Social media and trade and popular press magazine articles are used to promote A.R.T.S.®.

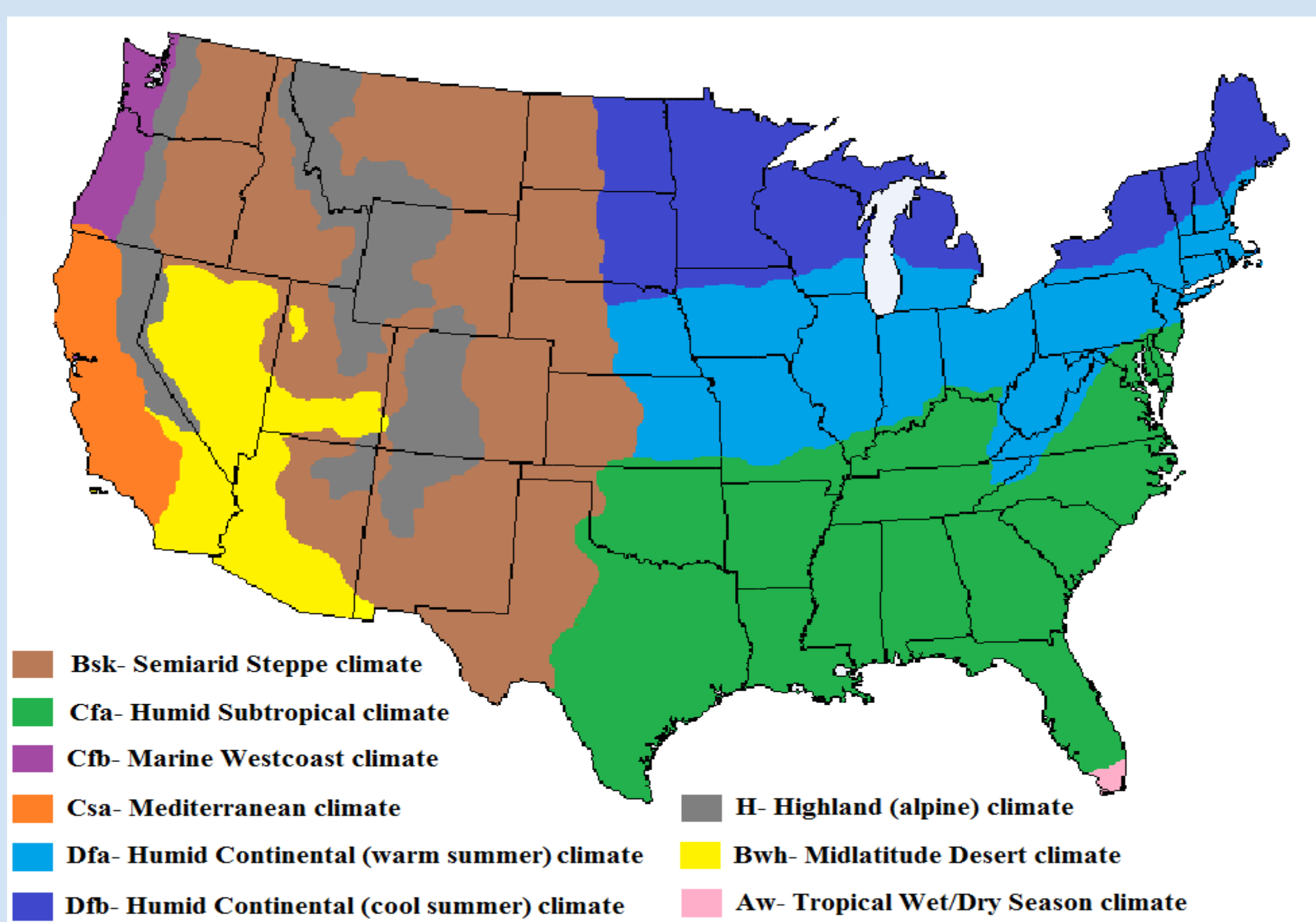


Fig. 1. Köppen climate regions of the continental US.

Climate region	Trial site and location
H	Ashton Gardens at Thanksgiving Point, Lehi, UT
Dfb	Boerner Botanical Garden, Hales Corners, WI
Csa	California State University-Fullerton Arboretum, Fullerton, CA
BSK	Cheyenne Botanic Gardens, Cheyenne, WY
Cfa	City of Farmers Branch, Farmers Branch, TX*
Cfa	City of Tyler, Tyler, TX
Dfb	Green Bay Botanical Garden, Green Bay, WI*
Cfa	Louisiana State University-LSU AgCenter, Hammond, LA *
Dfa	Naugatuck Valley Community College, Waterbury, CT *
Dfb	North Dakota State University, Absaraka, ND
Cfb	Portland International Rose Test Garden, Portland, OR
Dfa	Swarthmore College-Scott Arboretum, Swarthmore, PA *
Bsk	Texas A&M Agrilife Extension, Midland, TX
Bwh	Tucson Botanical Garden, Tucson, AZ
Csa	University of California Cooperative Extension, Stockton, CA
Dfb	University of Minnesota Extension-Clay County, Dilworth, MN *
H	University of Utah-Red Butte Garden, Salt Lake City, UT *

* Trial sites that hosted the 2017-2018 trials that determined the 2020 A.R.T.S. Local Artist awards.

2020 A.R.T.S.® Local Artist Roses

There are eleven roses that have earned A.R.T.S.® Local Artist awards for 2020 with Screaming Neon Red™ ('BALneon') receiving awards in four regions and earning the added designation of being an A.R.T.S.® Master Rose (Table 2).

Table 2. Eleven A.R.T.S.® Local Artist winning roses for 2020.

A.R.T.S.® 2020 Local Artists	Köppen regions won				Introducer
	CFA	DFA	DFB	H	
Highwire Flyer™ ('RADwire')			*	*	Star® Roses & Plants
Kardinal Kolorscape® ('KORsixkono')	*			*	Newflora / Star® Roses and Plants
Kashmir™ ('BALmir')	*	*			Bailey Nurseries
Miracle on the Hudson® ('Bartholomew')	*	*	*		Certified Roses
Music Box™ ('BALbox')				*	Bailey Nurseries
Phloxy Baby™ ('RADcleome')		*	*		Star® Roses & Plants
Raspberry Kiss™ ('CHEwsumsigns')				*	Certified Roses
Screaming Neon Red™ ('BALneon')	*	*	*	*	Bailey Nurseries
Tequila Gold® ('MEIpojona')				*	Star® Roses & Plants
Tequila Supreme® ('MEIkokan')				*	Star® Roses & Plants
True Bloom™ True Integrity ('LIMbird')			*		Altman Plants



Fig. 2. Photos of 2020 A.R.T.S.® Local Artist roses: Highwire Flyer™ (A), Kardinal Kolorscape® (B), Kashmir™ (C), Miracle on the Hudson® (D), Music Box™ (E), Phloxy Baby™ (F), Raspberry Kiss™ (G), Screaming Neon Red™ (H), Tequila Gold® (I), Tequila Supreme® (J), and True Bloom™ True Integrity (K).

Acknowledgements: The authors thank the many volunteer trial site managers, trial sites, evaluators, and industry partners that have made the A.R.T.S.® program possible.

Literature cited: Hammond et al., 2019. Acta Hort. (1232):193-201.