

# Plant Evaluation Notes

## *An Evaluation Study of Coral Bells*

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Few perennials have exploded onto the scene quite like coral bells, or *Heuchera*. Since the early 1990s, an astounding number of cultivars have been introduced to gardens around the world. The newer cultivars highlight enhanced foliage colors, distinctive leaf shapes and larger flowers. Expressive names like ‘Amber Waves’, ‘Cathedral Windows’, ‘Harmonic Convergence’ and ‘Quilter’s Joy’ have captured the attention of gardeners everywhere.

*Heuchera* is a member of the saxifrage family (Saxifragaceae) with approximately 55 species native to North America. Only a handful of species represent the majority of *Heuchera* in cultivation today. In fact, the genetic background of many garden hybrids is attributed to three species in particular, *H. americana*, *H. micrantha* and *H. sanguinea*. Most coral bells are hardy in Zones 4-9.

Coral bells are herbaceous, evergreen perennials with generally spreading habits. Rosettes of leaves grow from stout woody crowns with fibrous roots. Leaves are maple-to heart-shaped with lobed, wavy or entire margins. Much of the excitement surrounding coral bells today is due to the developments in foliage colors and patterns—purple, ruby, bronze and amber colors, as well as patterns with prominent or colorful veins, mottling and

streaks. The bell-shaped flowers come in shades of red, pink, coral and pure to greenish white. The small, delicate blossoms appear in late spring clustered on wiry stems above the foliage.

Coral bells grow best in light shade and moist, well-drained organic soils. They will grow in full sun if the soil is kept consistently moist, but good drainage is essential to good health. Coral bells are shallow-rooted, and their woody crowns are held above the soil as the plants age. This tendency can cause older plants to heave out of the ground during winter months, resulting in desiccated or dead plants. To guard against leaf and crown dehydration, plants should be divided, replanted or supplemented with soil around the crown. Coral bells tend to be short-lived and may need to be rejuvenated every three to four years. Although coral bells are disease- and pest-resistant, crown rot may be a problem if soils do not drain adequately during winter.

Coral bells are used as accents or in groups in perennial borders, rock gardens and woodland gardens. They can be grown with other foliage plants that contrast or complement their leaf color; for example, Japanese painted ferns (*Athyrium niponicum* var. *pictum*) or spotted dead nettles (*Lamium maculatum*) are good companions with

purple-leaved cultivars. Coral bells mix well with tulips and daffodils, as well as hostas, ferns and other woodland perennials. The dusky purple flowers of Persian fritillaria (*Fritillaria persica*) nicely complement the bronze-purple leaves of ‘Palace Purple’ and its kin.

### The Evaluation Project

A significant introduction of new *Heuchera* hybrids began in the 1990s and continues today. In 1992, author and *Heuchera* breeder Alan Bloom lamented, “It is a pity that so few named varieties are to be found in nursery catalogs and garden centers.” Thanks to the efforts of Alan Bloom and other plant breeders including Dan Heims of Terra Nova Nurseries and Charles Oliver of The Primrose Path, this statement was already outdated by 1995. Today, there are 161 taxa of *Heuchera* listed in the *RHS Plant Finder* and 178 taxa on the Andersen Horticultural Library Web site.

The Chicago Botanic Garden (USDA Hardiness Zone 5b, AHS Plant Heat-Zone 5) evaluated more than 60 species and cultivars of *Heuchera* from 1995 to 2000. The goals of the trial were to observe many of the new *Heuchera* cultivars that were commercially available at that time and to determine the best coral bells for Midwestern gardens. The test group included garden standards such as ‘Palace Purple’ and many of the newest cultivars of the day.

Three plants of each taxon were grown together in two adjacent sites that featured the natural shade provided by mature trees. Most plants received dappled to full shade for the entire day, although several areas received full sun briefly at midday. All plants were sheltered from wind by the wooden fences that surrounded the garden. The clay-loam soil was well-drained, with a pH of 7.5. Overhead sprinklers provided water as needed, and no fertilizer was applied. Mulch consisting of shredded leaves and wood chips was placed around the plants for water conservation and weed suppression. No winter protection was provided.

### Observations

A comprehensive evaluation of 64 taxa of *Heuchera* occurred from the spring of 1995



*Heuchera sanguinea* ‘White Cloud’

Photo: Jenny Lee

through the autumn of 2000. Each taxon was observed for winter injury; cultural adaptability to the soils and conditions of the test site; disease and pest problems; and ornamental traits including foliage and habit quality, plant size, and floral display. Plant traits and evaluation specifics for 43 taxa that completed all five years of the study are shown in Table 1. The remaining 21 taxa lived for two years or less (Table 2). Plants that died during the evaluation period were not retested; therefore, no winter hardiness determinations were made for plants that lived less than two years.

Coral bells are typically recognized for either their floral or foliar displays. Although

all coral bells produce flowers, the cultivars with showy blossoms are usually distinguished from those with greenish-white blossoms. In general, coral bells with green leaves, other than *Heuchera americana* cultivars, have colorful flowers. On the other hand, the coral bells with colorful foliage typically have whitish flowers with a green or purple cast.

Flower production was typically observed between 40% and 60%, and rarely higher than 80%. An exceptional floral display was considered over 60% and consisted of 25 or more flowering stems per plant. Coral bells with colorful flower production at 60% or greater each year included 'Cappuccino',

'Coral Pink', 'Cultus Bay Beauty', 'Red Prince', 'White Marble' and *Heuchera sanguinea* 'White Cloud'. Except for 'Cappuccino', these coral bells featured green leaves with or without a silver pattern. The coral bells with a high production of greenish-white blossoms included 'Lace Ruffles', 'Molly Bush', 'Palace Purple', 'Persian Carpet', 'Ruby Ruffles', *H. americana* 'Bartram' and 'Garnet'. *Heuchera* 'Cappuccino' and 'Palace Passion' were the only coral bells that had both colored leaves and showy flowers.

The sturdiness of flower stems was difficult to predict because moisture and wind

**Table 1:** Plant Characteristics and Performance Summary Ratings

Overall Rating	<i>Heuchera</i>	Height <sup>1</sup>	Width	Foliage Color	Flower Color	Bloom Period	Flower Coverage
★★★★	'Brandon Pink'	12 in./32 in.	21 in.	dark green, silver cast	bright fuchsia	mid May-late Jun	40%•
★★★★	'Bressingham Bronze'	12 in./26 in.	36 in.	dark bronze-green	white	early Aug-mid Oct	50%
★★★	'Burgundy Frost'	12 in./25 in.	21 in.	burgundy-green, silver cast	greenish white	early Jun-late Jul	15%
★★★★	'Cappuccino'	10 in./36 in.	20 in.	light bronze	pink	early Jun-early Aug	80%
★★★★	'Carousel'	9 in./27 in.	18 in.	green, silver overlay	reddish pink	late May-early Jul	30%•
★★	'Cascade Dawn'	10 in./36 in.	27 in.	burgundy, silver cast	white	mid Jun-mid Aug	30%•
★★★	'Chartreuse'	8 in./20 in.	15 in.	silver-green, chartreuse	greenish white	late May-mid Jul	10%
★★★★	'Chatterbox'	12 in./32 in.	22 in.	green, silvery veins	dark pink	early Jun-late Jul	40%•
★★★★	'Chocolate Ruffles'	12 in./28 in.	25 in.	chocolate-purple, ruffled	purplish white	early Jun-early Aug	50%
★★★★	'Coral Cloud'	9 in./28 in.	18 in.	light green, silver cast	purplish pink	early Jun-early Aug	50%
★★★★	'Coral Pink'	12 in./40 in.	24 in.	green, silver flecks	pink	early Jun-early Aug	80%•
★★★★	'Cultus Bay Beauty'	12 in./38 in.	24 in.	green, silver cast	pink	early Jun-early Aug	60%•
★★★★	'Eco Magnifolia'	15 in./42 in.	24 in.	green, silver cast	greenish white	mid Jun-early Aug	40%
★★★	'Emerald Veil'	16 in./40 in.	24 in.	silvery, green veins	greenish white	early Jun-late Jul	30%
★★★	'Fire Sprite'	8 in./20 in.	15 in.	green	red	mid Jun-early Aug	10%
★★★★	'Gaiety'	12 in./25 in.	24 in.	green	pink	early Jun-late Jul	40%•
★★★	'Huntsman'	6 in./26 in.	10 in.	green	red	early Jun-early Aug	50%
★★★	'Jack Frost'	9 in./21 in.	27 in.	green, silver mottling	rose-red	mid Jun-early Aug	10%•
★★★★	'June Bride'	12 in./29 in.	22 in.	green	white	early Jun-mid Jul	50%•
★★★★	'Lace Ruffles'	16 in./36 in.	32 in.	dark green, silver flecks	greenish white	early Jun-mid Jul	80%
★★★★	'Molly Bush'	16 in./30 in.	36 in.	dark purple	greenish white	mid Jul-early Oct	80%
★★★★	'Montrose Ruby'	15 in./36 in.	32 in.	burgundy-red, silver cast	white	mid Jun-early Aug	50%
★★★★	'Palace Passion'	11 in./36 in.	22 in.	bronze-purple, silver cast	coral-pink	early Jun-mid Aug	50%•
★★★	'Patricia Louise'	8 in./27 in.	15 in.	green, silver cast	pink	early Jun-mid Jul	25%•
★★★★	'Persian Carpet'	14 in./38 in.	28 in.	purple, silver	greenish white	mid Jun-late Aug	60%•
★★★	'Pewter Veil'	12 in./40 in.	26 in.	purple, silver cast	greenish white	early Jun-mid Jul	50%
★★★	'Pluie de Feu'	6 in./22 in.	14 in.	green, chartreuse flecks	cherry red	early Jun-late Jul	40%•
★★★★	'Plum Pudding'	12 in./30 in.	24 in.	dark purple, silver cast	white	early Jun-early Aug	20%•
★★★★	'Purple Petticoats'	14 in./36 in.	33 in.	burgundy-bronze, ruffled	greenish white	early Jun-early Aug	50%
★★★	'Raspberry Regal'	10 in./32 in.	22 in.	dark green	pinkish red	early Jun-early Jul	30%•
★★★★	'Red Prince'	9 in./26 in.	14 in.	green	red	early Jun-mid Aug	90%
★★★★	'Ruby Ruffles'	15 in./36 in.	28 in.	purple, silvery cast	white	mid Jun-early Aug	60%
★★★★	'Ruby Veil'	12 in./42 in.	26 in.	dark purple, silvery veins	greenish white	late Jun-early Sep	25%
★★	'Something Special'	7 in.	14 in.	green, lighter green flecks	did not flower		
★★★★	'Velvet Night'	13 in./43 in.	24 in.	dark burgundy, silver cast	greenish white	early Jun-early Aug	50%
★★★★	'White Marble'	12 in./28 in.	20 in.	green, white variegation	white	mid Jun-late Jul	60%
★★	'Widar'	8 in./23 in.	14 in.	green, white mottling	red	mid Jun-late Jul	10%
★★★★	'Winter Red'	10 in./26 in.	18 in.	green	pinkish red	early Jun-early Jul	40%
★★★★	<i>americana</i> 'Bartram'	12 in./40 in.	27 in.	green, silver cast	greenish white	early Jun-late Jul	60%
★★★★	<i>americana</i> 'Garnet'	14 in./42 in.	28 in.	garnet fading to green	greenish white	early Jun-late Jul	60%
★★★★	<i>americana</i> 'Ring of Fire'	14 in./44 in.	27 in.	silvery green, purple veins	greenish white	early Jun-late Jul	40%•
★★★★	<i>micrantha</i> 'Palace Purple'	18 in./32 in.	30 in.	bronze-purple	greenish white	mid Jul-early Oct	70%
★★★★	<i>sanguinea</i> 'White Cloud'	9 in./26 in.	22 in.	light green, silver flecks	white	early Jun-late Jul	80%

Overall Ratings: ★★★★★ excellent, ★★★★ good, ★★★ fair, ★★ poor, ★ very poor; half stars included in ratings.

<sup>1</sup>First measurement is height of foliar mound; second measurement is full height with flowering stems.

• Rabbit damage to flower stalks resulting in lower flower production in one or more years.



Photo: Richard Hawke

*Heuchera* 'Ruby Ruffles'

affected whether or not the stems remained upright. Most coral bells had thin, wiry stems, but 'Raspberry Regal' had thicker stalks that remained upright all season. Other coral bells with consistently upright flower stems included 'Bressingham Bronze', 'Coral Pink', 'Molly Bush', 'Palace Passion', 'Palace Purple', 'Ruby Veil' and *Heuchera sanguinea* 'White Cloud'. Floppy to lodged flower stems were regularly observed on 'Brandon Pink', 'Carousel', 'Coral Pink', 'Emerald Veil', 'Lace Ruffles', 'Patricia Louise' and *H. americana* 'Bartram' and 'Ring of Fire'.

Coral bells grown for their foliage are generally classified as either colored or green. There are two seasons of foliar color, characterized by the new spring leaves and the mature leaves of midsummer. Some coral bells emerge in tones of burgundy and copper that fade with maturity to deep bronze and olive-green hues while others have spring leaves of the glossiest deep purple that fade to dark bronzy green. The description of a coral bells' foliage may not portray the full range of colors possible during the growing season. The coral bells with colored foliage that were exceptional in the trial included 'Bressingham Bronze', 'Cappuccino', 'Chocolate Ruffles', 'Molly Bush', 'Montrose Ruby', 'Palace Passion', 'Palace Purple', 'Persian Carpet' and 'Purple Petticoats'.

The coral bells with leaves that emerged burgundy with a silvery cast, burgundy venation and dark purple undersides included 'Burgundy Frost', 'Cascade Dawn', 'Persian Carpet', 'Pewter Veil', 'Plum Pudding', 'Ruby

Ruffles', 'Ruby Veil' and 'Velvet Night'. Their leaves eventually faded to olive-green with a silvery cast and dark olive green veins, although some burgundy leaves were always present. The burgundy-bronze leaves of 'Chocolate Ruffles' and 'Purple Petticoats' faded to bronzy olive-green over the summer, although many of the glossy leaves of 'Chocolate Ruffles' retained their dark color all season. *Heuchera* 'Bressingham Bronze' and 'Molly Bush' had spring leaves of glossy burgundy that faded to dark bronzy green. The leaves of 'Cappuccino' and 'Palace Passion' emerged coppery bronze to burgundy, but even the faded leaves retained purple undersides.

Many of the green-leaved coral bells were overlaid, veined or flecked with silver or white. By autumn, much of the silver overlay diminished, making the leaves appear green overall. Some of the green-leaved coral bells also exhibited purple color in their spring leaves, including the *Heuchera americana* cultivars 'Bartram', 'Garnet' and 'Ring of Fire'.

Generally, the coral bells had spreading habits and foliar mounds below 15 inches tall. Among the coral bells with outstanding, robust habits were 'Bressingham Bronze', 'Cappuccino', 'Chocolate Ruffles', 'Coral Cloud', 'Eco Magnifolia', 'Gaiety', 'June Bride', 'Molly Bush', 'Montrose Ruby', 'Palace Purple', 'Purple Petticoats', 'Red Prince' and *H. sanguinea* 'White Cloud'. Open or loose crowns were observed on some coral bells during flowering or by the end of the season. Open crowns were commonly observed on 'Brandon Pink', 'Burgundy Frost',

'Carousel', 'Chartreuse', 'Coral Pink', 'Emerald Veil', 'Huntsman', 'Lace Ruffles', 'Patricia Louise', 'Persian Carpet', 'Pluie de Feu', 'Raspberry Regal', 'Ruby Ruffles', 'Velvet Night' and *H. americana* 'Ring of Fire'. Sometimes the decline in health and habit was related to flower production; therefore, plants typically recovered after flowering ended or if the plants were deadheaded.

Crown heaving due to age or frost is a common problem on coral bells. Frost heaving can occur during winter or spring on young and old plants alike. Few coral bells in the trial were adversely affected by heaving or exhibited woody crown growth that required division or replanting. In the fourth year of the trial, coral bells requiring one or more plants to be divided included 'Carousel', 'Chocolate Ruffles', 'Emerald Veil', 'Montrose Ruby', 'Palace Passion', 'Pewter Veil' and *Heuchera americana* 'Garnet'. In each case, the divided plants survived the remainder of the evaluation term, except for *H. americana* 'Garnet' plants, all of which died later in the season. All plants of 'Cascade Dawn', 'Palace Purple' and 'Purple Petticoats' were replanted in the third year but not divided. *Heuchera* 'Carousel' and 'Palace Passion' displayed particular vigor; in fact, the divided plants quickly matched the size and health of the undivided plants.

A poor floral display was more commonly related to flower stem injury caused by rabbit browsing than by low flower

**Table 2:** *Heuchera* Completing Two Years or Less of Evaluation

Overall Rating	<i>Heuchera</i>
★★★	'Carmen'
★★	'Cherry Splash'
★★	'Chiqui'
★★★	'Chocolate Veil'
★★	'Fairy Cups'
★★★	'Freedom'
★★	'Frosty'
★	'Green Ivory'
★★	'Jubilee'
★★	'Mt. St. Helens'
★★	'Oakington Jewel'
★★	'Pewter Moon'
★★	'Red Spangles'
★★	'Regal Robe'
★	'Ruffles'
★	'Snow Storm'
★★	'Snowflake'
★★★	'Stormy Seas'
★	'Strawberry Swirl'
★★★	<i>americana</i> 'Dale's Strain'
★★★	<i>cylindrica</i> 'Greenfinch'

Overall Ratings: ★★★ fair, ★★ poor, ★ very poor; half-star ratings included in table.



Photo: Jenny Lee

*Heuchera* 'Molly Bush'

Photo: C. Jones

*Heuchera* 'Red Prince'

Photo: Richard Hawke

*Heuchera americana* 'Eco Magnifolia'

production (see Table 1). Aside from periodic rabbit damage in early spring, other significant problems were leaf spot and stem rot. Stem rot caused by the fungal disease *Sclerotinia* was the primary cause of decline or death among the coral bells. Coral bells with one or more plants killed by stem rot included 'Carousel', 'Cascade Dawn', 'Chartreuse', 'Emerald Veil', 'Fire Sprite', 'Garnet', 'Huntsman', 'Jack Frost', 'June Bride', 'Pluie de Feu', 'Purple Petticoats', 'Ruby Ruffles' and 'Velvet Night'. Many, but not all, of the coral bells affected by stem rot have a lineage that includes *Heuchera sanguinea*, a species that requires excellent drainage for good health.

Some coral bells were planted in poor health and never gained vigor during the evaluation term. These plants, which died during the first or second winter, included 'Fairy Cups', 'Oakington Jewel', 'Pewter Moon', 'Regal Robe', 'Snow Storm', 'Snowflake' and *Heuchera cylindrica* 'Greenfinch'. Additionally, the coral bells that were affected by stem rot and leaf spots and were removed in 1996 due to poor health included 'Chiqui', 'Chocolate Veil', 'Freedom', 'Jubilee' and 'Stormy Seas'. All plants of 'Green Ivory' died during the first growing season.

Winter hardiness was not considered a problem for the coral bells in the trial. Although a fair number of plants were killed over winter, cold temperatures were only one contributing factor to the loss. In most cases, the plants that died were seriously weakened or stressed before winter. *Heuchera* 'Mt. St.

Helens' was the only taxon in good health throughout the summer that did not survive the winter. Unfortunately, since it was not retested, winter hardiness was inconclusive. Coral bells that finished the evaluation but had one or more plants injured or killed during winter included 'Pewter Veil', 'Plum Pudding', 'Something Special', 'Widar' and 'Winter Red'. Coral bells that died over winter from stem or crown rot included 'Carmen', 'Cherry Splash', 'Frosty', 'Red Spangles', 'Ruffles', 'Strawberry Swirl' and *H. americana* 'Dale's Strain'.

### Conclusion

Each year the list of commercially available *Heuchera* cultivars increases with the addition of new cultivars that display unique and exciting traits. A trial initiated today would have a very different makeup from this evaluation's 1995 plant list, but many of the top-rated older cultivars are still available. The addition of many new cultivars can be confusing to gardeners who are looking for a good garden plant but not necessarily the newest introduction.

The top-rated coral bells in the Garden's trial were 'Bressingham Bronze', 'Cappuccino', 'Molly Bush', 'Montrose Ruby', 'Palace Purple' and *Heuchera sanguinea* 'White Cloud'. Each of these coral bells received the highest marks based on good habit, healthy foliage, high flower production and winter hardiness. *Heuchera* 'Molly Bush', the top performer in this trial, received the prestigious Award of Garden Merit (AGM) from the Royal Horticultural Society in 2001.

Coral bells are invaluable garden plants, whether they are grown for their showy blossoms or colorful leaves. The tall wands of dainty flowers add color and movement, while the colorful foliage complements or contrasts with the tapestry of the shade garden. Breeding and selection continue, enhancing foliage color and improving flower production. Coral bells with lime-green or amber-gold leaves and abundant red or pink blossoms are now available. Whether you wait each spring for the newest introductions or prefer to grow time-tested plants, coral bells are exceptional perennials for today's gardens.

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