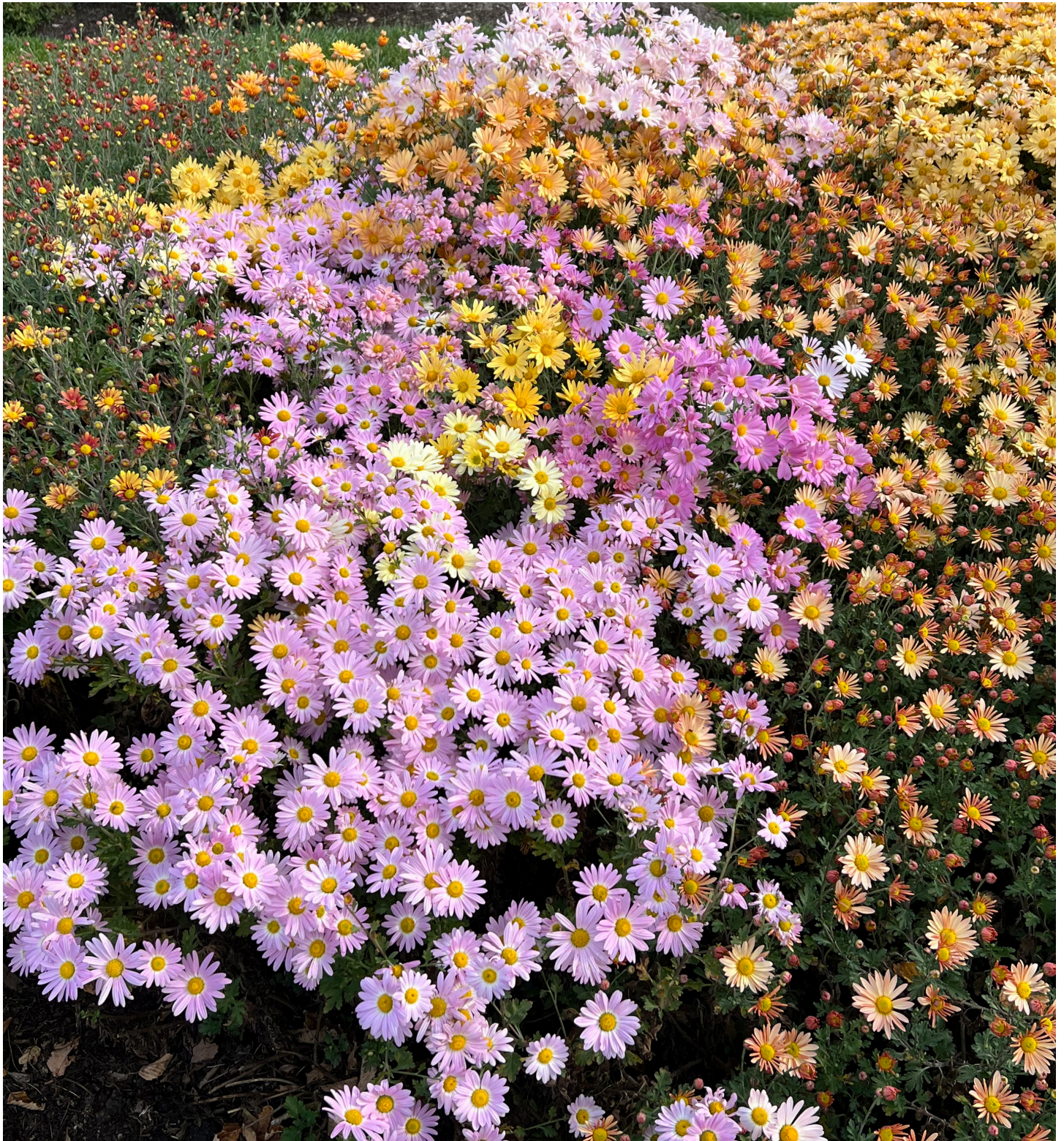




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Plant Evaluation Notes



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Hardy Garden Chrysanthemums

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Chrysanthemum 'Mary Stoker'

Chrysanthemums or mums are much more than the disposable potted plants that show up in garden centers and grocery stores in late summer and early autumn. These pot mums are bred and marketed as seasonal or ephemeral rather than perennial plants, whereas the less commonly grown garden mums are true perennials. Garden mums are sometimes called old-fashioned mums to distinguish them from the seasonal ones. Chrysanthemums have been cultivated and revered in China and Japan for centuries, first as medicinal herbs and later for their showy flowers. On their journey westward, floral mums were popular in Europe before arriving in America in the eighteenth century with many forms bred and developed along the way. The origin of the "modern" old-fashioned types dates to the early 1900s—some of the earliest cultivars such as 'Clara Curtis' and 'Mary Stoker' are still grown today. Beyond breeding, new cultivars have arisen over the years as mums have been passed along from gardener to gardener. Today, garden mums are less commonly represented in contemporary landscapes compared to seasonal pot mums.

Historically, *Chrysanthemum*—a member of the aster family (Asteraceae)—was a genus of approximately 200 species before being split up in the late 1990s; species were taxonomically reclassified under *Ajania*, *Dendranthema*, *Leucanthemum*, *Leucanthemella*, *Nipponanthemum*, *Rhodanthemum*, and *Tanacetum*. Later, the nomenclatural rule of conservation was applied over the rule of priority, resulting in *Dendranthema* reverting to *Chrysanthemum*.

Plants of the World Online cites 39 accepted species of *Chrysanthemum* native to Europe, Asia, and North America. Most of the garden mums in cultivation are hybrids, often of unknown or uncertain parentage, and sometimes with muddled or conflicting nomenclature. For example, 'Hillside Sheffield Pink' has been or is currently represented horticulturally as 'Sheffield Pink' and 'Hillside Pink Sheffield' and is often confused with and/or misnamed 'Apricot' and 'Single Apricot Korean'.

Chrysanthemum flowers come in a range of colors and shapes, from simple daisy-like to fanciful double quilled types. As with relatives such as coneflowers [*Echinacea* spp.] and sunflowers [*Helianthus* spp.], mum flowers have showy petal-like ray florets that surround a central boss of fertile disk florets. The colorful rays come in white, pink, red, purple, bronze, yellow, orange, and bicolors; disk florets are usually sunny yellow. Flower forms may be single, semidouble, or fully double with flat, spoon-shaped, or tubular (quilled) ray florets. The flowers may be solitary or held in loose clusters. Bloom periods vary by cultivar but in northern regions flowering commonly begins in late summer to early autumn and lasts to hard frost. The green leaves are lobed to pinnatifid, hairy, and strongly aromatic. Plant habits are bushy with branched stems and are typically rhizomatous. The fast growth rate commonly results in patchy crowns after a couple of years—crown division rejuvenates health and habit.



Chrysanthemum 'Fine Feathers'

Garden mums are easy to grow in full sun, average to fertile, moist but well-drained soils, and neutral to alkaline edaphic factors. Wet or waterlogged soil, especially in winter, is detrimental to survival. Garden mums are hardy in USDA Zones 5-9, although winter injury can occur in colder regions, and autumnal frosts can end flowering prematurely. Pests and diseases such as aphids, thrips, spider mites, botrytis, leaf spots, stem and root rot, wilt, and aster yellows can be problems. Suggested maintenance includes pinching once or twice a season before flowering to control stem height and/or to delay bloom, dividing plants every two to three years as needed to promote vigor and fullness, providing discreet support to lessen floppiness—especially for tall cultivars—and culling seedlings to preserve floral purity. A loose mulch applied after the ground freezes is sometimes recommended for winter crown protection in colder areas but should be removed before growth begins in spring.

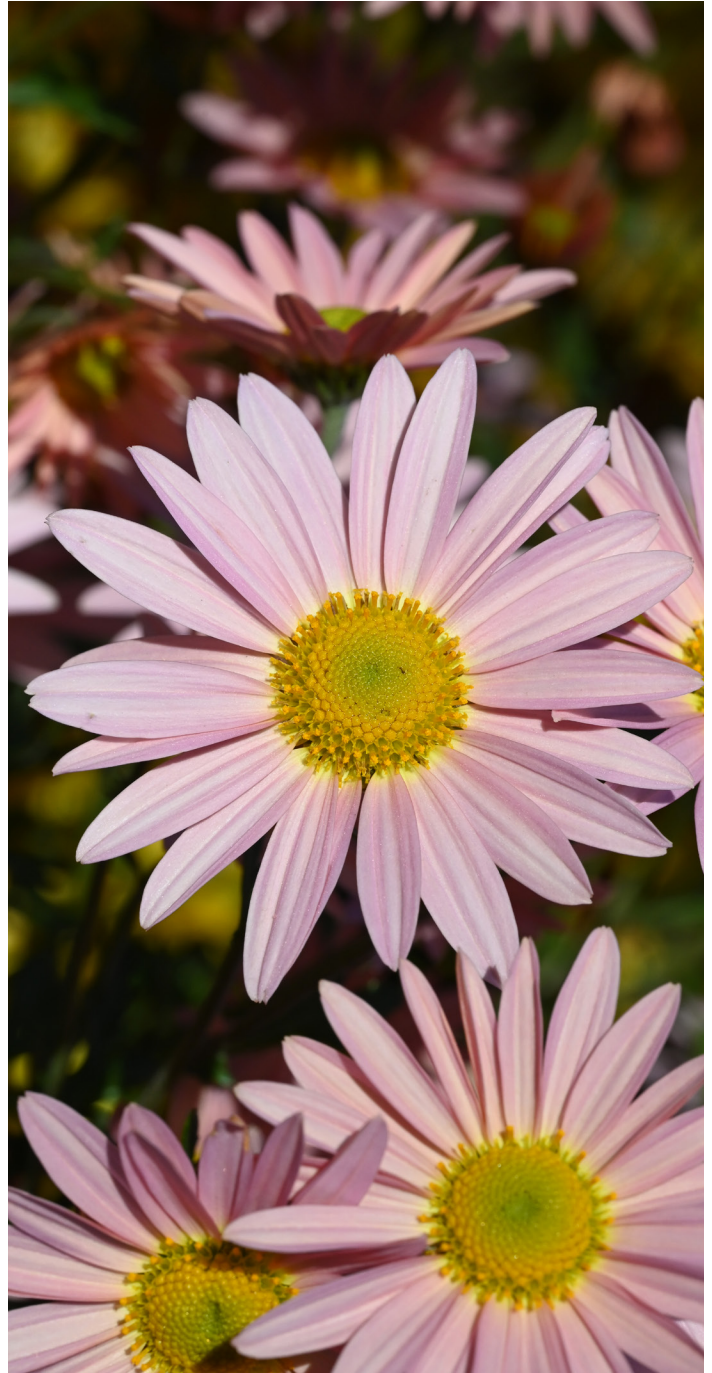
In gardens and landscapes, garden mums can be massed or placed as accents in borders and beds. Late-blooming perennials such as asters, goldenrods, Russian sages, and ornamental grasses make good companions. Chrysanthemums produce pyrethrum, which is a natural insect repellent, so mums are beneficial growing near vegetables. Mums are smothered in flowers at peak bloom and attract bees, flies, and butterflies—the late flowers extend the bloom season for gardeners and pollinators alike.

Trial Parameters

The Chicago Botanic Garden (USDA Hardiness Zone 6a/5b, AHS Plant Heat-Zone 5) evaluated 21 cultivars of perennial chrysanthemums from 2021 through 2025. The goal of the trial was to determine the garden-worthiness and winter-hardiness of selected perennial mums in USDA Zone 5b [6a as of November 2023]. Garden value was based mainly on the ornamental effectiveness of the floral display given a late autumnal anthesis and winter survival or cold hardiness. The average first frost date in the Chicago area occurs between October 11 and October 31, and the early onset of freezing temperatures can truncate the bloom period of late-flowering plants.

Five plants of each taxon were grown in side-by-side rows for easy comparison of ornamental traits and landscape performance. The evaluation garden was openly exposed to wind in all directions and potentially received up to 10 hours of full sun daily during the growing season.

Maintenance practices were kept to a minimum, thereby allowing the plants to thrive or fail under natural conditions. Trial beds were irrigated via overhead sprinklers as needed, mulched with composted leaves once each summer, and regularly weeded. Moreover, plants were not pinched, deadheaded, fertilized, winter mulched, or chemically treated for insects or diseases. Seedlings, once identified as such, were removed from the evaluation plot.



Chrysanthemum 'Hillside Sheffield Pink'



Hardy mum trial [October 24, 2024]

The Evaluation Report

The garden mums were regularly observed and judged on 1) adaptability to the soil and environmental conditions of the trial site; 2) disease and pest issues; 3) winter hardiness and survivability; and 4) ornamental qualities associated with flowers, foliage, and habits. Plots were monitored for seedlings, although determination of seedling parentage was not confirmed. Final performance ratings for the 21 taxa in the trial are shown in Table 1; ratings are based on flower production and floral display quality, foliage and habit quality, plant health and vigor, and winter survivability.

Top-rated Chrysanthemums

Eighteen garden mum cultivars were acquired for the trial. Three additional landscape mums—visually representative of seasonal pot mums—were concurrently under evaluation and are included in the final reporting. Nearly 50 percent of the mums received excellent or good overall final ratings, with 'Hillside Sheffield Pink' and 'Autumn Spice Igloo' garnering top marks for their floriferousness and superior floral display, sustained habit quality, and winter hardiness.

'Hillside Sheffield Pink' was consistently the top-rated garden mum each year as well as a favorite of visitors and staff. Brick-red buds opened to single pink and matured to fragrant apricot-pink flowers. At peak bloom in early November, flower coverage was so dense that leaves were fully obscured. Individual flowers, 2½ to 3 inches wide, appeared light pink, but a whisper of orange was noticeable in mass. The mid-October to early November bloom period always ended prematurely with more than 50 percent of flowers typically still open at hard frost; flowers were less affected by minor frosts than most other cultivars. Many of the garden mums may not have reached their full width because the closeness of neighboring plants likely restricted their spread; the cultivars were planted



Chrysanthemum 'Hillside Sheffield Pink'

on 36-inch centers. That said, 'Hillside Sheffield Pink' was bounded by another mum along one side only, allowing the plants to grow broader on the open side. At 42 inches tall and 84 inches wide, it was the largest in the trial.

'Autumn Spice Igloo' was one of three landscape mums including 'Firedance Igloo' and 'Harvest Igloo' that presented like seasonal pot mums. Double rusty orange flowers, 1¼ inches wide, blanketed compact bushy plants from early September to early November. Flowers were densely produced and crowded at peak bloom in late September. The quantity and quality of the flowers consistently impressed our evaluators each year. The downside was that flowers began browning about a week after peak, thereby detracting from the overall display in October. Plants were generally rounded mounds to 15 inches tall and 32 inches wide. No crown injury or plant losses were observed in winter. Although 'Autumn Spice Igloo' looked more like a pot mum, it proved to be a persistent hardy perennial for the duration of the trial.



Chrysanthemum 'Autumn Spice Igloo'



Early-flowering *Chrysanthemum* 'Clara Curtis' in mum trial

Trial Details

The mums in the trial were informally categorized into three groups for comparative purposes: 1) garden mums, 2) landscape mums, and 3) cut-flower or florist mums. The garden mums included 'Autumn Bronze', 'Brandywine Sunset', 'Cambodian Queen', 'Campfire Glow', 'Clara Curtis', 'Country Girl', 'Emperor of China', 'Hillside Sheffield Pink', 'Mary Stoker', 'Peaches and Cream', 'Penelope Pease', and 'Sheffield Pink'. The landscape mums were 'Autumn Spice Igloo', 'Firedance Igloo', and 'Harvest Igloo', while 'First Lady', 'Fine Feathers', 'Fred Stone', 'Happy Face', 'Ivory Pinwheel', and 'Yellow Starlet' represented florist mums.

Flower colors ranged from soft pastels such as the apricot-yellow of 'Mary Stoker' and the creamy yellow of 'Ivory Pinwheel' to the smoldering autumnal tones of 'Campfire Glow' and 'Harvest Igloo'. Flower morphology included single, semidouble, and fully double forms, and flowers ranged in size from 1 to 3 inches wide. The earliest flowering cultivars opened between mid-July and early September, while later ones opened between late September and mid-October. See Table 1 for observed bloom times. There was a correlation between early bloom periods and lower overall ratings related to health and vigor; however, it was not absolute—the earlier flowering cultivar 'Firedance Igloo' had a high rating, while several poor performers were autumn-bloomers. Furthermore, semidouble- and double-flowered cultivars were generally weaker than single-flowered varieties regardless of their bloom times, except for 'Autumn Spice Igloo' and 'Firedance Igloo'.

Flower production and floral quality throughout the protracted bloom cycles factored into final ratings, but the truncated bloom periods specific to later-flowering cultivars did not unduly affect ratings. Unfortunately, early types such as 'Clara Curtis', 'First Lady', 'Happy Face', and 'Yellow

Starlet' held onto brown deadheads throughout the long bloom periods and received lower final ratings in part for how the spent blooms detracted from their floral quality and diminished the overall display. Heavy flower production was observed on most taxa regardless of plant size; however, lower flower production was noted in several instances where plant vigor was weak in one or more years. Reduced efflorescence or flower production related to vigor was observed on 'Clara Curtis' in 2023 and 2024, 'Fred Stone' in 2023, and 'Ivory Pinwheel' in 2023. The mums were beneficial for late-season pollinators, especially flies and bees, which were common and frequent visitors up to hard frost. Additionally, moths and butterflies were common pollinators earlier in the season.

The bloom cycle typically ended with a hard frost in early November each year; once again, the first frost date in the Chicago area occurs between October 11 and October 31, with October 15 commonly cited as the average date. Occasionally, light frost caused minor damage to flower quality prior to killing frosts, which were recorded between November 6 and November 9 in 2021 – 2025. No hard frosts were observed in October, which benefited mid-October bloomers such as 'Brandywine Sunset', 'Cambodian Queen', 'Campfire Glow', 'Country Girl', 'Emperor of China', 'Hillside Sheffield Pink', 'Penelope Pease', and 'Sheffield Pink'. Considering the recorded frost dates observed during the trial, we cannot judge how long flowering would naturally occur with a later frost. However, for taxa that began flowering in early to mid-October, 80 to 100 percent of flowers were still open and ornamental at hard frost, so the bloom period might be expected to continue for several weeks longer if no killing frost occurred. Mums that began flowering in August or September typically had a small percentage of flowers still open in early November.



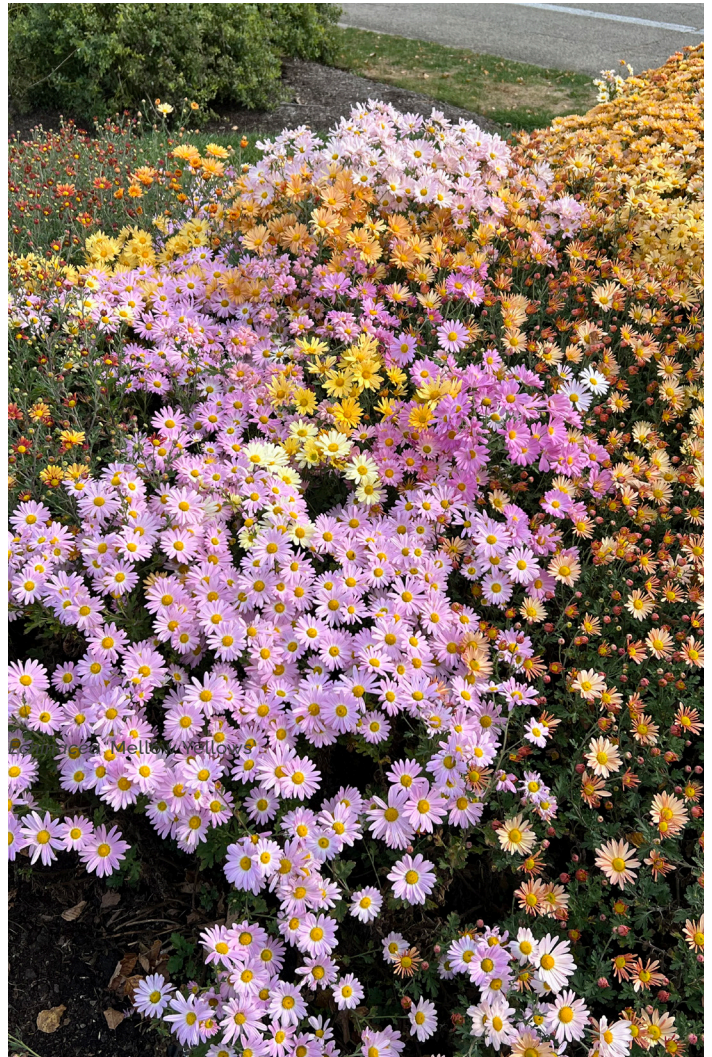
Chrysanthemum 'Country Girl'

While accepting the synonymousness of 'Hillside Sheffield Pink' and 'Sheffield Pink' given their close resemblance, we observed that 'Sheffield Pink' was not as strong a plant by comparison. The differences in their phenotypic traits were subtle, yet enough that both are cited in Table 1. For example, the rays of 'Hillside Sheffield Pink' were flat, while 'Sheffield Pink' had involute or boat-shaped rays that made the flowers more pointed. The genetic makeup of plants sold as 'Hillside Sheffield Pink' and 'Sheffield Pink' is unknown, so although the names are deemed synonymous, the plants offered under these respective names are unlikely to be clonal duplicates.

Plant habits were generally mounded, with sizes ranging from 11 to 42 inches tall and 21 to 84 inches wide; 'Harvest Igloo' was the smallest and 'Hillside Sheffield Pink' was the largest in the respective ranges. All plants were floriferous and vigorous for the first two years in the garden, but the habit quality of some mums declined in subsequent years. Relaxed to floppy stems, gaps in the plant canopy, and/or uneven stem heights contributed to lower habit quality ratings. By the third year of the trial, plant crowns were patchier in spring, which sometimes corresponded to less uniformity in stem height later in the season. Loose crowns were primarily related to the rhizomatous growth habit, with shoots emerging each successive spring at the perimeter of bare centers. Even with loose crowns in spring, most plants bulked up in summer. The spacing of plants in the trial influenced plant habits in two ways. First, tall-stemmed plants were held upright by similarly sized neighboring plants, maximizing the floral display.

Plants were often constrained by adjacent plants, so widths may not be absolute. And second, taller plants outgrew and flopped onto shorter mums where planted side-by-side. Rain and overhead irrigation exacerbated floppiness, pulling down stems heavy with flowers, which was especially problematic for semidouble- and double-flowered cultivars.

Reseeding can be viewed as a floral issue—spoiling the flower display with other colors—but seedlings were deemed more harmful to habit quality. As the mums aged, the open crowns provided space for vigorous seedlings to grow within the original plant; seedlings also sprouted on the perimeter and interspaces within the trial plot. Multiple cultivars in proximity likely amplified the creation of new flower colors. Distinguishing between original stems and seedlings was often difficult until flower buds formed late in the season. Occasionally, marked differences in stem height and foliage helped with identifying seedlings earlier. While the mix of flower colors created through natural hybridization was ornamental, seedlings—sometimes excessive—crowded and shaded out the original plant(s), resulting in uneven to open habits when the seedlings were removed. Mums such as 'Brandywine Sunset', 'Cambodian Queen', 'Country Girl', 'Fred Stone', 'Ivory Pinwheel', and 'Peaches and Cream' typically had the thinnest crowns in spring, so more seedlings were observed in their plots.



Mixed seedlings in mum trial bed



Habit quality after removal of seedlings

The lobed to dissected medium-green leaves provided texture and were generally healthy before flowers formed. Due to low light, the lowest and/or interior leaves were often blackened when flowering began but were unseen unless stems splayed open. The leaves of 'Emperor of China' turned partially burgundy when blooming, which we initially took for a cultural issue but learned it is a predictable trait of the cultivar. Foliar diseases were uncommon and infrequent overall. Leaf spotting was noted on 'First Lady' in 2024 and 'Clara Curtis' in 2022 – 2024 and aster yellows was found on one plant of 'Fred Stone' in 2022. The infected plant was immediately removed.

More than half of the taxa survived four winters without any plant losses or crown injury observed. Crown injury in one year only was noted on 'Autumn Bronze', 'Cambodian Queen', 'Happy Face', and 'Yellow Starlet'; 'Brandywine Sunset', 'Emperor of China', 'Fred Stone', and 'Ivory Pinwheel' were the taxa that suffered crown injury in consecutive winters. Ten of the 105 individual plants in the trial died in winter; 'Fine Feathers' was the only mum with all plants killed over successive years prior to the end of the trial.



Burgundy leaves of *Chrysanthemum* 'Emperor of China'



Pollinator on *Chrysanthemum* 'Ivory Pinwheel' [November 3, 2022]

Summary

Hardy garden mums are uncommonly grown in the Upper Midwest, so their value as late-season garden plants here was uncertain at the outset of the trial. The late bloom extends the season for gardeners and pollinators but presents a problem in colder climates where average frost dates occur earlier and weather is increasingly unpredictable. Growing the garden mums over multiple seasons provided information on the ornamental potential of their floral display—flower production and length of the bloom period—related to autumnal frost dates. Additionally, determining their real cold-hardiness was important.

The primary goal was to evaluate garden mums, often referred to as old-fashioned mums, rather than the more commonly available seasonal mums, although three landscape mums were included. Nearly half of the mums received excellent or good overall final ratings, with 'Autumn Spice Igloo' and 'Hillside Sheffield Pink' earning top scores for strong flower production, habit quality, and winter hardiness. While a comprehensive evaluation was undertaken, the floral show was the primary ornamental trait contributing to the overall ratings. Plant habit quality and winter hardiness were also factored into the final scores. Generally, winter hardiness was not deemed a problem for the mums in the trial. Fewer than 10 percent of the plants died over the four-year trial period.

The late-blooming flowers might be considered a significant drawback to growing perennial mums in cold climate zones; however, heavy flower production ensured a strong floral display even when bloom periods were shortened by frosts. Mid-October was the latest start of flowering and November 9 was the latest hard frost date recorded between 2021 and 2025. Copious flowers were still blooming on some of the mums when frost occurred. While a shortened flower period is not ideal, the quality, quantity, and novelty of the colorful garden mums will be worth it for some gardeners.



Chrysanthemum 'Brandywine Sunset'



Chrysanthemum 'Autumn Bronze'

Acknowledgments

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Cover photo: Chicago Botanic Garden mum trials, 2024 [photo by Richard Hawke]

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Table 1: Observed plant traits and performance ratings

Rating ¹	<i>Chrysanthemum</i>	Flower Color	Flower Form	Flower Size	Bloom Period`	Height	Width
★★★	'Autumn Bronze'	yellow, pink, or orange cast	semidouble	1¾ in.	late Sep to early Nov	36 in.	50 in.
★★★★	'Autumn Spice Igloo'	rusty orange	double	1¼ in.	early Sep to late Oct	15 in.	32 in.
★★★	'Brandywine Sunset'	soft yellow, peachy cast	single	2½ in.	mid-Oct to early Nov	32 in.	50 in.
★★	'Cambodian Queen'	pink, whitish base	single	2½ in.	mid-Oct to early Nov	26 in.	36 in.
★★★	'Campfire Glow'	orange, yellow highlights	single	2½ in.	mid-Oct to early Nov	30 in.	50 in.
★★	'Clara Curtis'	bright pink	single	2 in.	mid-July to mid-Oct	30 in.	54 in.
★★★★	'Country Girl'	pink	single	3 in.	mid-Oct to early Nov	40 in.	50 in.
★★	'Emperor of China'	light pink	double, spooned rays	2¾ in.	mid-Oct to early Nov	42 in.	48 in.
★	'Fine Feathers'	orange and yellow	double, quilled rays	3½ in.	early Oct to mid-Nov	25 in.	36 in.
★★★★	'Firedance Igloo'	mahogany red	double	1½ in.	early Aug to mid- Oct	19 in.	50 in.
★★	'First Lady'	pink and creamy yellow	semidouble, quilled rays	3 in.	mid-July to early Nov	30 in.	56 in.
★★	'Fred Stone'	red	double	2½ in.	mid-Aug to early Nov	33 in.	34 in.
★★	'Happy Face'	yellow	semidouble, quilled rays	3 in.	mid-Aug to early Nov	24 in.	44 in.
★★	'Harvest Igloo'	deep bronze-orange	double	1¾ in.	early Sep to early Oct	11 in.	21 in.
★★★★	'Hillside Sheffield Pink'	apricot-pink	single	2½ in.	mid-Oct to early Nov	42 in.	84 in.
★	'Ivory Pinwheel'	light creamy yellow	semidouble, spooned rays	3 in.	late Sep to early Nov	22 in.	25 in.
★★★	'Mary Stoker'	apricot-yellow	single	2¼ in.	mid-Sep to mid-Oct	36 in.	47 in.
★★	'Peaches and Cream'	pale peachy-pink	single	1¾ in.	early Sep to early Nov	31 in.	32 in.
★★	'Penelope Pease'	creamy white and soft pink	single	2 in.	mid-Oct to early Nov	42 in.	48 in.
★★★	'Sheffield Pink'	apricot-pink	single	2 in.	mid-Oct to early Nov	33 in.	42 in.
★	'Yellow Starlet'	yellow	semidouble, spooned rays	1¾ in.	mid-Aug to early Nov	37 in.	40 in.

¹ Overall Ratings: ★★★★ excellent, ★★★ good, ★★ fair, ★ poor