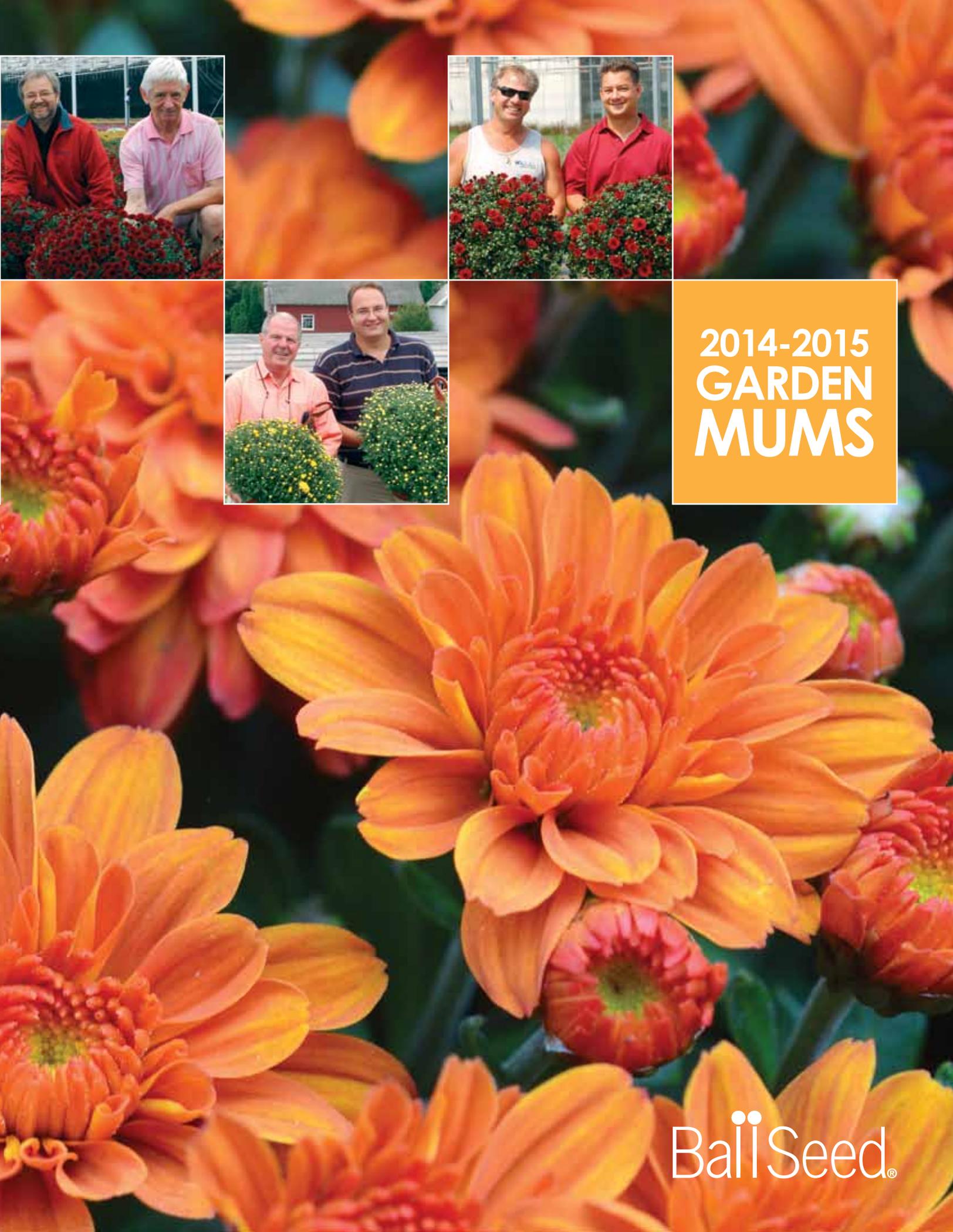


**2014-2015
GARDEN
MUMS**



BaïSeed®

NEW 2014

Meet our 10 new garden mums, sure to become market leaders – some are already Ed's Picks! You'll find exciting additions in every major color class.

That's new Pumpkin Pie on the cover – with its striking fluorescent color and prolific flowering, it's a must-have for your Fall program.



On the cover: Pumpkin Pie



Ed's Pick

Honeyblush Yellow page 6
Virtually peerless in natural season crops



Buttercup Yellow page 3
Top-notch yellow for early Fall flowerings



Perfectly Orange page 14
Big flowers, rich color – a sport of Perfectly Pink



Katelli Yellow page 7
The perfect partner to Katelli Bronze



Ed's Pick

Pumpkin Pie page 15
A future Fall classic – ideal color



Brilliance Pink page 18
A great addition to early-flowering pinks



Pizzazz Purple page 20
Intense, long-lasting color for landscapes



Ed's Pick



Purple Majesty page 20
Intense and unique flower color for early October sales



Ed's Pick



Red Hots page 25
A significant improvement in Mid-September reds



Celestial White page 28
One of the whitest garden mums ever

Key to symbols

New – an easy way to identify the varieties you need



European (ball-shaped) habit



Performs well in Spring flowerings



Performs well in black cloth flowerings



Heat-tolerant variety (FL/TX)

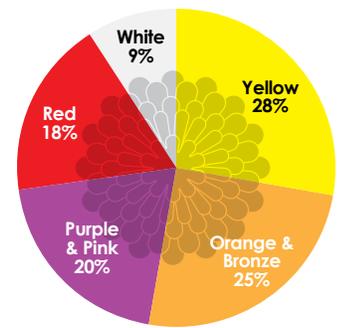


Excellent for landscapes



What is a key factor in producing a successful, fast-selling crop of garden mums? In two words: variety selection! Whether you're selling to retailers, consumers or landscapers, choosing the best varieties maximizes your profit and satisfies your customers. That's why this new two-year Ball Garden Mums catalog looks a little different.

The perfect mix for a can't-miss program!



You'll find expanded product information, including tips on production, scheduling and use. Icons and charts give you important facts at a glance and make it easier to plan your crops and choose your varieties. New photos show habit and bloom for most varieties. And don't miss ideas and varieties that can expand your Fall market on page 32.

This year, you'll also meet a few of your fellow mum growers and see which varieties are turning in a cash crop for them!

As always, we're here to help you with everything from selection and scheduling to complete cultural information. Thanks for your partnership – let's keep growing!

Meet Ed Higgins of Wadsworth, OH, your Ball "mum guy" for 8 years! Ed has introduced new garden mums to the industry since 1985 and evaluates every Ball Garden Mum in our North American trials. To contact Ed, email ehiggins@ballhort.com or call 330 256-3628.



Ed's Picks

For the best garden mum program, include some of these top-notch performers. Check to see which are most suitable for your region and get ready for big sales!

Yellow

Goldmine Yellow
NEW Honeyblush Yellow
 Sundance Yellow
 Sunny Day
 Sunrise Yellow
 Yellow Tang
 Yellowstone

Orange

Atomic Orange
 Autumn Glow Bronze
 Avalon Orange
 Bedazzled Bronze
 Blazing Orange
 Emberglow Orange
 Petit Orange
NEW Pumpkin Pie
 Sunset Orange

Pink/Purple

Avalon Pink
 Avalon Purple
 Flamingo Pink
 Pink Frenzy
NEW Pizzazz Purple
NEW Purple Majesty
 Stellar Purple
 Venus Purple

Red

Five Alarm Red
 Radiant Red
NEW Red Hots
 Red Rover
 Red Ryder

White

Dove White
 Moonglow White
 Starburst White

Yellow



Rob O'Hara
at Rainbow Greenhouses, Inc., Chilliwack, BC, shows off his Goldcrest Yellow crop.



Avalon Yellow (PPAF)

Timing	Flower date	Black cloth response	Habit	Vigor
Very late	10/15	8 weeks	Mounded	Medium

Good-sized, mounded plants with large, dark yellow, decorative flowers can be used in almost any size container. Part of the end-of-season Avalon family, Avalon Yellow grows slowly until early September, then pushes out into its full size.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	X	X	X
Black cloth	-	X	X	X	-	-	-



NEW 2014 Buttercup Yellow (PPAF)

Timing	Flower date	Black cloth response	Habit	Vigor
Early	9/13	7 weeks	European	Medium

Top-notch choice for early Fall flowering! Features a great European habit combined with prolific, uniform flowering and good keeping qualities. Buttercup Yellow is easy to grow and adapts to all size containers. Earlier, stronger, and more uniform than Goldcrest Yellow.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	X	X	X
Black cloth	-	-	-	-	-	-	-



Dandelion Wine (PPAF)

Timing	Flower date	Black cloth response	Habit	Vigor
Late	9/29	7 weeks	European	Medium/tall

Golden-yellow flowers on spherical plants with excellent flexibility. Average uniformity. Early crown bud flowering may allow for mid-September sales. Best in 8-in. and larger pots.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	-	X	X	X	X	-	-
Black cloth	-	X	X	-	-	-	-



Eureka Yellow

Timing	Flower date	Black cloth response	Habit	Vigor
Mid	9/25	7 weeks	Mounded	Medium/short

Fresh yellow decorative variety performs best in high temperature areas. Eureka can be used in black cloth or natural season crops, best suited for 4 to 8-in. containers.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	-	-	-	X
Black cloth	X	X	-	-	-	-	-



Florina Yellow (PPAF)

Timing	Flower date	Black cloth response	Habit	Vigor
Mid	9/20	6 weeks	European	Short

Small yellow daisy delivers big-league flower counts. Our earliest yellow daisy to flower in the Fall. Florina is fast and uniform to flower in black cloth crops. Always extremely prolific and uniform. Ideal in 4 to 6-in. pots, but difficult to size up in containers over 8 in.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	-	-	-	X
Black cloth	X	X	-	-	-	-	-



Gold Ball

Timing	Flower date	Black cloth response	Habit	Vigor
Very late	10/12	8 weeks	European	Short

Gold Ball is a good bridge variety between Yellow Tang and Sunny Day. Plants develop into almost perfect spheres, completely covered in flowers. Gold Ball is uniform but slow in black cloth crops. Note: some sensitivity to BLS (bacterial leaf spot).

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	-	-	X
Black cloth	X	X	-	-	-	-	-

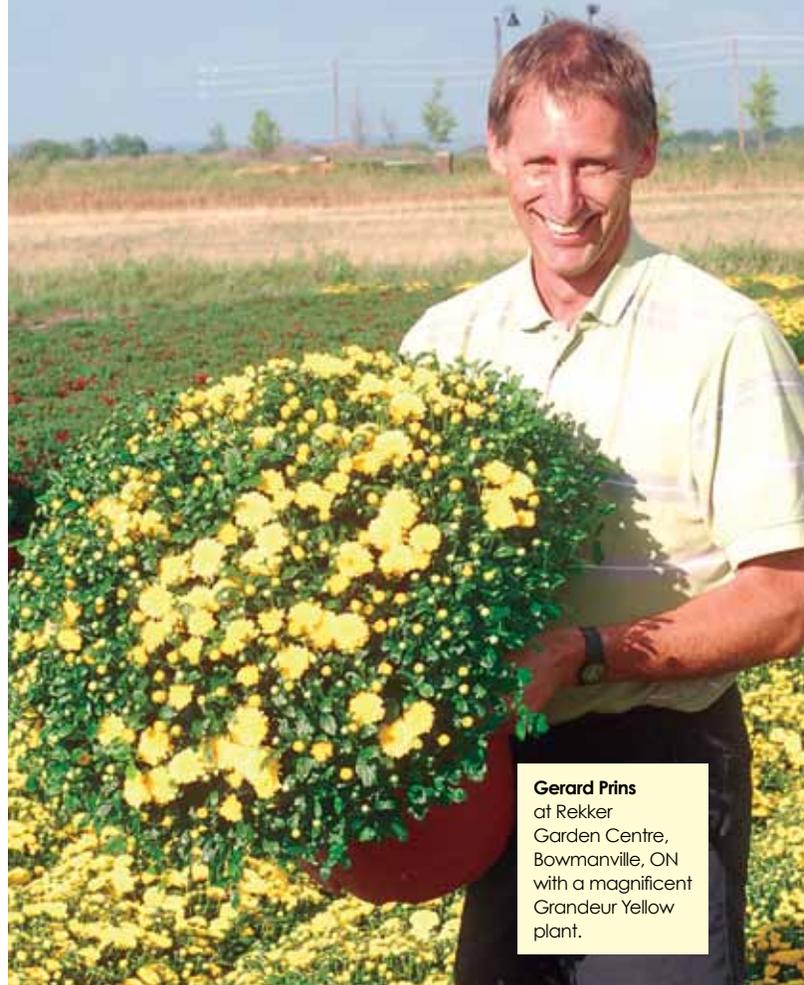


Gold Rush Yellow (PP20,462)

Timing	Flower date	Black cloth response	Habit	Vigor
Late	10/3	7 weeks	European	Medium/tall

Great plant with great color for late September and into October. Golden yellow flowers framed by very dark foliage. Gold Rush is well-suited for 8-in. and larger containers. Takes high temperatures well. Note: Use PGRs in black cloth to minimize peduncle stretch.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	X	X	X
Black cloth	-	X	X	X	X	X	-



Gerard Prins
at Rekker Garden Centre,
Bowmanville, ON
with a magnificent
Grandeur Yellow
plant.

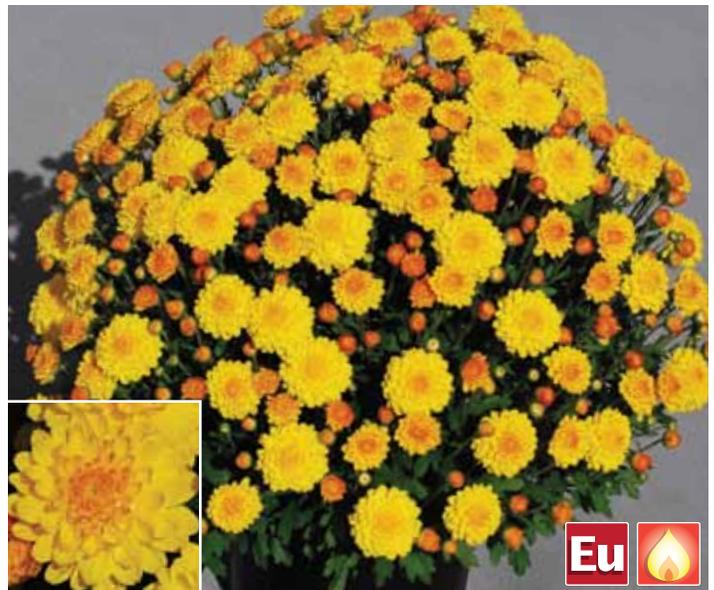


Goldcrest Yellow (PP11,606)

Timing	Flower date	Black cloth response	Habit	Vigor
Early	9/14	7 weeks	Rounded	Medium

This time-tested variety has an excellent habit, rich yellow flower color and exceptional foliage. Goldcrest Yellow is well-suited for use in any size container in black cloth and natural season crops. Slow 7-week response in black cloth flowering.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	X	X	X
Black cloth	X	X	X	X	X	X	X



Goldfinch Yellow (PP10,463)

Timing	Flower date	Black cloth response	Habit	Vigor
Very late	10/10	8 weeks	European	Medium

This "golden oldie" still performs well in natural season programs – very grower-friendly. Always a nice ball-shaped plant, its decorative flowers have a slight two-tone look that's enhanced by cooler finishes. Note: not for black cloth crops.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	X	X	X
Black cloth	-	-	-	-	-	-	-



Ed's Pick



Goldmine Yellow (PPAF)

Timing	Flower date	Black cloth response	Habit	Vigor
Early	9/8	6 weeks	European	Medium

One of the earliest to flower garden mums in Fall crops. Provides rich, golden yellow color, prolific flower counts and dark, glossy foliage. Fast 6-week response in black cloth programs. Vigor must be controlled in small containers.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	-	X	X	X	X	X	X
Black cloth	-	X	X	X	X	X	X

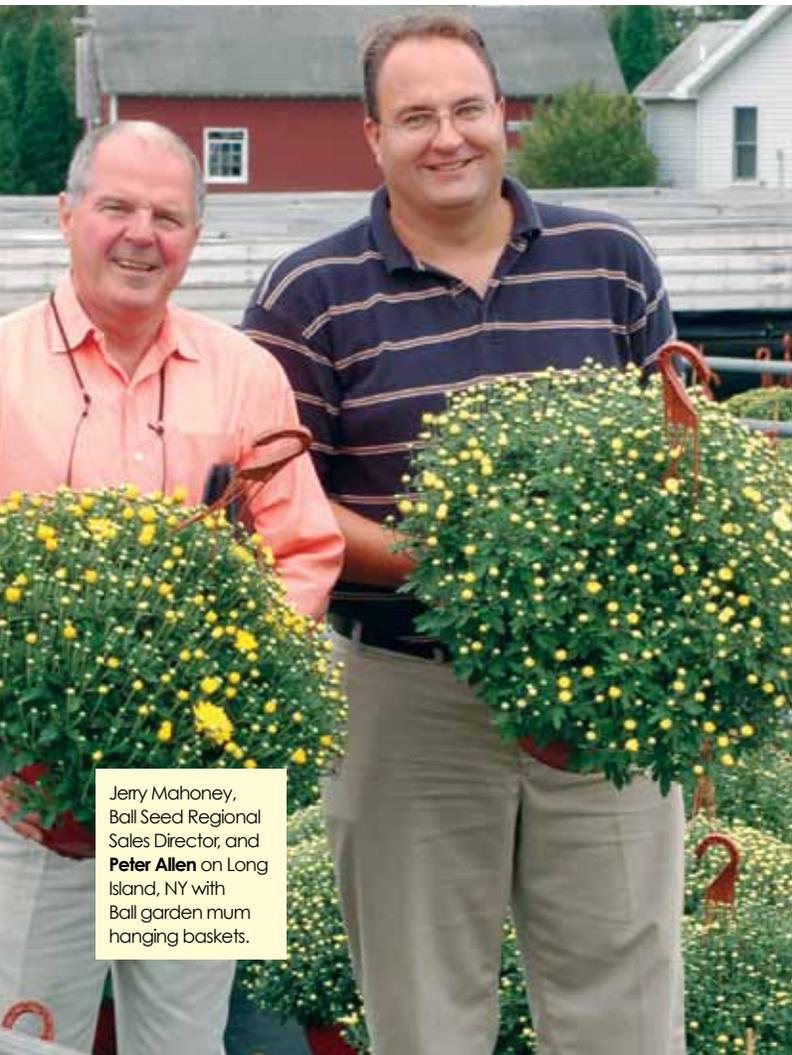


Grandeur Yellow (PP19,814)

Timing	Flower date	Black cloth response	Habit	Vigor
Mid	9/18	7 weeks	Mounded	Medium

High-quality finished plants have excellent growth habits and big, bright blooms. Flowers after Sunrise Yellow and Buttercup Yellow. Strong stems are great in large containers. Note: foliage will be chartreuse in June and July, then green up as plant matures.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	X	X	X
Black cloth	X	X	X	X	X	X	X



Jerry Mahoney, Ball Seed Regional Sales Director, and Peter Allen on Long Island, NY with Ball garden mum hanging baskets.



Ed's Pick



NEW 2014 Honeyblush Yellow (PPAF)

Timing	Flower date	Black cloth response	Habit	Vigor
Mid	9/23	7 weeks	European	Medium

Virtually peerless among natural season crops! An outstanding performer in the peak September sales season, Honeyblush Yellow delivers fantastic bloom color, superb growth habit and striking dark green foliage. Can upgrade all yellow varieties in its flowering range.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	X	X	X
Black cloth	-	-	-	-	-	-	-



NEW 2014 Katelli Yellow (PPAF)

Timing	Flower date	Black cloth response	Habit	Vigor
Early	9/15	6 weeks	European	Short

A bright yellow mutation of Katelli Bronze with similar growth habit and uniformity. Katelli Yellow flowers a couple days faster in both black cloth and natural season crops. This compact grower performs best in 4-in. through 8-in. pots.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	-	-	-	X
Black cloth	X	X	-	-	-	-	X



Noel Hernandez and Ball Seed sales rep Peter Scherzer at American Color, Inc. in Orange, VA with a beautiful Goldmine Yellow.



Ed's Pick



Sundance Yellow (PPAF)

Timing	Flower date	Black cloth response	Habit	Vigor
Late	9/30	8 weeks	European	Short/medium

Classic European look and outstanding color in late September natural season programs. Prolific, uniform, ball-shaped plants can be used in most size pots. Performs well in black cloth crops.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	X	X	X
Black cloth	X	X	X	X	-	-	X



Ed's Pick



Sunny Day (PPAF)

Timing	Flower date	Black cloth response	Habit	Vigor
Very late	10/17	7 weeks	European	Medium

Maybe the finest yellow decorative to end the Fall season! European growth habit covered with exceptionally bright flowers that exhibit very good keeping qualities. Excellent companion to EMBERGLOW Orange for mid to late October sales. Outstanding in black cloth crops!

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	X	X	X
Black cloth	X	X	X	X	-	-	X



Sunrise Yellow (PPAF)

Timing	Flower date	Black cloth response	Habit	Vigor
Early	9/8	7 weeks	European	Medium

Might be the brightest yellow decorative flowers in the marketplace! Exceptionally well-developed plants with strong, flexible stems are engulfed by flowers in the Fall. Earlier, more uniform and more prolific than Goldcrest Yellow. Not suggested for black cloth crops.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	X	X	X
Black cloth	-	-	-	-	-	-	-

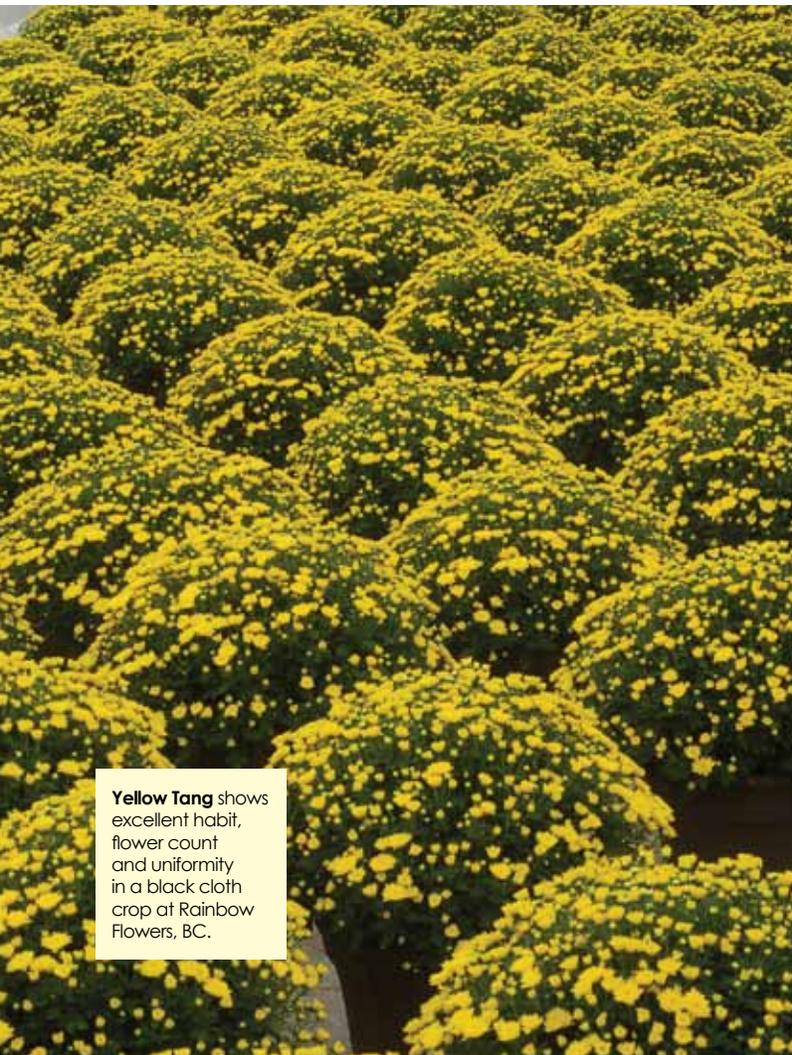


Yellow Tang (PPAF)

Timing	Flower date	Black cloth response	Habit	Vigor
Very late	10/7	7 weeks	European	Medium

"Best in class" variety is strong, on time, uniform and prolific in black cloth. Showy and full of blooms, with a European habit in both Fall natural season crops and black cloth programs. Displays reliable performance for growers and superior keeping qualities for consumers.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	X	X	X
Black cloth	X	X	X	X	X	-	X



Yellow Tang shows excellent habit, flower count and uniformity in a black cloth crop at Rainbow Flowers, BC.



Yellowstone (PPAF)

Timing	Flower date	Black cloth response	Habit	Vigor
Mid	9/18	7 weeks	European	Medium

One of the most prolific garden mums around! Yellowstone has far more flowers and better uniformity than Goldcrest Yellow. Yellowstone is fast and efficient in black cloth production. A great companion plant to Celosia Intenz in natural season crops.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	X	X	X
Black cloth	X	X	X	X	-	-	X

Orange & Bronze



John Alexander,
Ball Seed sales
rep, with a classic
Fall pot of Sunset
Orange at Rocket
Farms, Salinas, CA.



Ed's Pick



Atomic Orange (PPAF)

Timing	Flower date	Black cloth response	Habit	Vigor
Late	9/30	7 weeks	European	Medium

Go-to variety for late Fall sales has large, dark orange flowers; spherical growth habit and glossy, dark foliage. Grow Atomic Orange as a standalone plant or use it in mixed containers. Larger flowers and much richer color than Beryl Orange.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	X	X	X
Black cloth	-	-	-	-	-	-	-



Ed's Pick



Autumn Glow Bronze (PPAF)

Timing	Flower date	Black cloth response	Habit	Vigor
Late	10/2	7 weeks	Mounded	Medium

Chocolate-centered petals with golden bronze outer rays create a showy Fall display. Spreading, mounded plants work well in most size pots. Easy to grow and size up. Follows Sunset Orange by about a week for lots of fresh, lively color in peak season.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	X	X	X
Black cloth	X	X	X	X	-	-	X



Avalon Orange (PPAF)

Timing	Flower date	Black cloth response	Habit	Vigor
Very late	10/15	8 weeks	Mounded	Medium

Terrific two-tone color, large flowers and an excellent mounded habit. Like all Avalons, Orange grows slowly until early September, when it surges for a beautiful finish – a great garden mum to wrap up the Fall season. Handles heavy Fall rains and light frosts. Try it in black cloth crops.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	X	X	X
Black cloth	X	X	X	X	–	–	X



Bedazzled Bronze (PPAF)

Timing	Flower date	Black cloth response	Habit	Vigor
Mid	9/22	7 weeks	European	Short

Extremely prolific and uniform flowering, with orange-red centers and golden bronze outer petals. Bedazzled Bronze performs well in black cloth and natural season crops. Best grown in 8-in. and smaller containers.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	–	–	X
Black cloth	X	X	X	–	–	–	X



Katelli Bronze is perfect for early-season decorative groupings.



Beryl Orange (PP15,416)

Timing	Flower date	Black cloth response	Habit	Vigor
Mid	9/25	6 weeks	European	Medium/short

Light orange flower color is lighter in warm climates. Ball-shaped plants have medium-sized decorative flowers. Beryl Orange can be used in black cloth crops, but the color is often too soft in hot greenhouse environments. Blazing Orange is better in black cloth.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	–	–	X
Black cloth	X	X	X	–	–	–	–

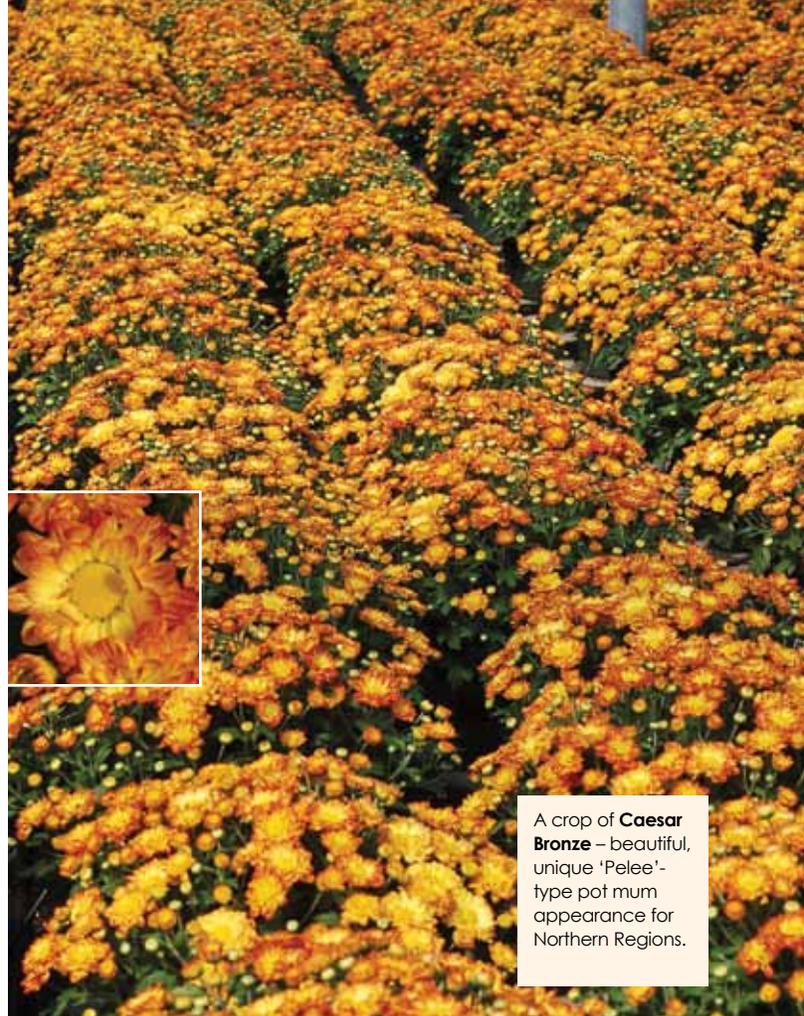


Caesar Bronze (PP15,402)

Timing	Flower date	Black cloth response	Habit	Vigor
Very late	10/7	7 weeks	Mounded	Medium

Produces striking bronze and yellow bicolor daisy flowers in Northern black cloth production. In hot Summer conditions, black cloth response slows and flower color is more yellow (inset). Natural season crops display a red base with faint yellow stripes (above).

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	X	-	-
Black cloth	X	X	X	X	-	-	-



A crop of **Caesar Bronze** – beautiful, unique 'Pelee'-type pot mum appearance for Northern Regions.



Blazing Orange (PPAF)

Timing	Flower date	Black cloth response	Habit	Vigor
Very late	10/12	7 weeks	Mounded	Medium

Outstanding performer for growers across North America! Large-flowered Blazing Orange displays great color in the North as well as in hot Southern areas. Use in all size containers for Spring, Summer and Fall flowerings. Excellent keeping qualities, great in landscapes.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	X	X	X
Black cloth	X	X	X	X	X	-	X



Early Autumn Bronze

Timing	Flower date	Black cloth response	Habit	Vigor
Early	9/15	6 weeks	Mounded	Short

Fresh-looking daisy features novel bronze and yellow color patterns. Early Autumn Bronze is best grown in 6-in. (15-cm) and smaller pots. Note: Allow extra growing time to size up, especially for black cloth crops.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	-	-	-	-
Black cloth	X	X	-	-	-	-	-



Echo Bronze (PP14,981)

Timing	Flower date	Black cloth response	Habit	Vigor
Mid	9/18	6 weeks	Round	Medium/tall

Beautiful orange color is a classic for Fall sales. Daisy flowers are large, showy and long-lasting. Echo Bronze always has some early-opening buds, making it one of the first varieties sold in the Fall.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	X	X	-
Black cloth	-	X	X	X	X	-	-



Ed's Pick



Emberglow Orange (PPAF)

Timing	Flower date	Black cloth response	Habit	Vigor
Very late	10/16	8 weeks	European	Medium

Premium variety for the final weeks of Fall mum sales! Emberglow Orange displays large flowers with true orange color, dark foliage and an exceptional spherical growth habit. It is a perfect companion to flower with Sunny Day. Not for black cloth or Spring-flowering crops.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	-	X	X	X	X	X	X
Black cloth	-	-	-	-	-	-	-



Flamingo Pineapple (PPAF)

Timing	Flower date	Black cloth response	Habit	Vigor
Mid	9/24	8 weeks	European	Medium

Always uniquely colored! In higher temperatures, blooms show more cream; in lower, more pink. A sport of Flamingo Pink with similar vigor and growth habit. Slightly earlier flowering than Flamingo Pink. Can be used in Northern black cloth crops, but is a bit slow with average uniformity.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	X	X	X
Black cloth	-	-	-	-	-	-	-



Harvest Bronze (PPAF)

Timing	Flower date	Black cloth response	Habit	Vigor
Late	10/2	7 weeks	European	Short

Prolific, uniform flowering with ball-shaped habit. In cool environments, color is a stunning blend of golden yellow and honey-bronzes. In hot environments, it takes on a rich yellow color. Black cloth crops also have golden yellow color. Extremely flexible stems and dark foliage.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	-	-	X
Black cloth	X	X	X	-	-	-	X



Homer Orange (PPAF)

Timing	Flower date	Black cloth response	Habit	Vigor
Early	9/14	6 weeks	Mounded	Medium

Large, orange decorative flowers are among the first to bloom in the Fall garden mum market. Mounded growth habit greatly benefits from a second pinch, allowing for much fuller and more productive flowerings. Otherwise, low flower count and marginal uniformity.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	-	X	X	-	-	-	-
Black cloth	-	-	-	-	-	-	-



Barbara Jeffery-Gibson at Jeffery's Greenhouses, St. Catharines, ON, with 6-in. Caesar Bronze black cloth crop.



Katelli Bronze (PPAF)

Timing	Flower date	Black cloth response	Habit	Vigor
Early	9/17	6 weeks	European	Short

Katelli Bronze is known for its outstanding color retention. Sharp two-tone flowers with dark bronze centers are carried on uniform, early-flowering plants. Reliable, but not vigorous, this variety is best grown in 8-in. and smaller pots. Takes the heat!

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	-	-	-	X
Black cloth	X	X	-	-	-	-	X



Orange Crush (PPAF)

Timing	Flower date	Black cloth response	Habit	Vigor
Late	10/2	7 weeks	European	Medium/tall

More flowers per plant than most garden mums! Grow Orange Crush in 8-in. pots and larger to allow for massive amounts of two-tone flowers in late September/early October. This variety always sizes up well, with excellent uniformity. Bracts develop in extreme heat.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	-	X	X	X	X	X	-
Black cloth	-	X	X	X	X	-	-



Outrageous Orange (PPAF)

Timing	Flower date	Black cloth response	Habit	Vigor
Late	10/3	7 weeks	European	Medium

Prolific, burnt orange decorative flowers are carried on strong, yet flexible, plants. Outrageous Orange is readily produced in most size containers. Amazing flower count per plant! Note: Flower color dulls a little quickly in hot temperatures.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	-	X	X	X	X	X	X
Black cloth	-	X	X	X	-	-	-



NEW 2014 Perfectly Orange (PPAF)

Timing	Flower date	Black cloth response	Habit	Vigor
Mid	9/21	7 weeks	Mounded	Short/medium

Large flowers and great orange color. This color mutation of Perfectly Pink has comparable vigor, habit and uniformity, but flowers a couple of days earlier. Note: Avoid large containers due to low vigor. Avoid Spring flowerings due to poor uniformity.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	-	-	X
Black cloth	X	X	-	-	-	-	-



Sunset Orange brightens Fall landscapes with sharp, two-tone color. An easy-to-grow variety, too!



Ed's Pick



Petit Orange (PPAF)

Timing	Flower date	Black cloth response	Habit	Vigor
Mid	9/25	7 weeks	European	Medium

Grower-friendly variety has perfect growth habit, excellent uniformity and extreme flower count! Use in all container sizes for Spring, Summer and natural season Fall crops. Looks like a decorative early, then opens to a duplex.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	X	X	X
Black cloth	X	X	X	X	X	X	X



Ed's Pick



NEW 2014 Pumpkin Pie (PPAF)

Timing	Flower date	Black cloth response	Habit	Vigor
Very late	10/11	7 weeks	European	Medium/tall

Striking color mimics Fall foliage and pumpkins! Pumpkin Pie is easy to size up, prolific and uniform, with good flower color in the South as well. Excellent for Fall decorations. Butterscotch flower color in hot black cloth flowerings. Note: Plant late to take advantage of its natural vigor.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	-	X	X	X	X	X	-
Black cloth	X	X	X	X	X	-	-



Ed's Pick



Sunset Orange (PP20,475)

Timing	Flower date	Black cloth response	Habit	Vigor
Late	9/28	7 weeks	European	Medium

An all-around grower favorite! Easy to grow and size up, with good stem length and excellent flexibility. Prolific, medium-size decorative flowers have sharp, two-tone color and good keeping quality. Good for all pot sizes and flowering seasons.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	X	X	X
Black cloth	X	X	X	X	X	X	X



Roadrunner Bronze (PP11,298)

Timing	Flower date	Black cloth response	Habit	Vigor
Early	9/12	6 weeks	Mounded	Medium

One of the first-to-flower Fall varieties! Flower color varies by temperature; more yellow blends in if hot and the bronze-orange intensifies if cool. Roadrunner Bronze is easy to size up for Fall crops. Not recommended for black cloth.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	-	X	X	X	X	X	X
Black cloth	-	-	-	-	-	-	-



Twilight Bronze (PPAF)

Timing	Flower date	Black cloth response	Habit	Vigor
Very late	10/8	7 weeks	European	Medium

Attractive and unique color! Honey-bronze outer petals surround red-bronze center petals. Prolific and uniform in flowering, Twilight Bronze often benefits from an extra week or two of growing time, especially in larger containers.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	-	-	X
Black cloth	X	X	-	-	-	-	-

Purple & Pink



New generation meets new garden mum! **Stella Davino** at Lou Davino Greenhouses, Hightstown, NJ with new Pizzazz Purple.



Adonis Purple (PP13,273)

Timing	Flower date	Black cloth response	Habit	Vigor
Mid	9/24	7 weeks	European	Medium

A reliable, time-tested variety for mid-September sales. Adonis Purple is easy to grow and adaptable to all size pots, with good flower color and keeping quality. Note: Can be used for black cloth crops, but may develop some foliar flecking in high temperatures.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	X	X	X
Black cloth	-	X	X	X	X	X	X



Amata Pink (PP14,546)

Timing	Flower date	Black cloth response	Habit	Vigor
Late	9/30	7 weeks	European	Medium

Consistent spherical growth habit with strong stems, medium green foliage and unique two-tone decorative flowers. Prolific, uniform-flowering Amata Pink is intense dark pink in cool Northern temperatures and smooth pink with more center white in Southern flowerings.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	X	X	X
Black cloth	X	X	X	-	-	-	-



Amphion Purple (PP13,271)

Timing	Flower date	Black cloth response	Habit	Vigor
Late	10/2	6 weeks	European	Medium

One of the nicest daisies available in garden mums! Dark pink flowers (almost purple in cool finishes) virtually engulf the plant, making it a great impulse item at retail. Easy to grow in any size pot, Amphion Purple features dark foliage, flexible stems and a spherical European habit.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	X	X	X
Black cloth	X	X	X	X	X	-	X



Avalon Pink (PPAF)

Timing	Flower date	Black cloth response	Habit	Vigor
Very late	10/15	8 weeks	Mounded	Medium

The "mother" of the Avalon family offers the family features of very large flowers with fine keeping qualities and sturdy, nicely mounded plants. Plants grow slowly through the Summer, then push through September for an outstanding product to end the natural Fall season.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	X	X	X
Black cloth	X	X	X	X	-	-	X



Avalon Purple (PPAF)

Timing	Flower date	Black cloth response	Habit	Vigor
Very late	10/15	8 weeks	Mounded	Medium

A superb Fall season-ending display! Avalon Purple features large, regal purple decorative flowers with excellent color retention on classically mounded plants. This variety is well-matched to all the other Avalons.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	X	X	X
Black cloth	X	X	X	X	-	-	X



Avalon Salmon (PPAF)

Timing	Flower date	Black cloth response	Habit	Vigor
Very late	10/15	8 weeks	Mounded	Medium

Vibrant, two-tone coral flower color. Comparable to all other Avalons in growth habit, vigor, flowering response and large flower size. Avalon Salmon has very good color retention and overall keeping quality.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	X	X	X
Black cloth	X	X	X	X	-	-	X



NEW 2014 Brilliance Pink (PPAF)

Timing	Flower date	Black cloth response	Habit	Vigor
Early	9/16	8 weeks	Mounded/ball	Medium

Brings great color to early-flowering pink varieties. Prolific and uniform flowering. Excellent spreading habit with strong stems and dark foliage. Earlier than Stellar Purple, times well with Grandeur Yellow in Fall flowerings. Note: Not recommended for black cloth flowerings.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	X	-	X
Black cloth	-	-	-	-	-	-	-



Calisto Pink (PPAF)

Timing	Flower date	Black cloth response	Habit	Vigor
Early	9/15	6 weeks	Semi-upright	Medium

Our earliest flowering pink! The flowers are large but tend to fade rapidly. Consider Perfectly Pink for better flower color and form, with slightly later flowering.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	-	-	-	-
Black cloth	-	-	-	-	-	-	-



Delphi Purple (PP12,478)

Timing	Flower date	Black cloth response	Habit	Vigor
Late	10/2	7 weeks	Mounded	Medium

An older variety that has great purple flower color. Venus Purple upgrades Delphi with its European habit, greater flower production and improved versatility.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	-	X	X	-	-	-	-
Black cloth	-	-	-	-	-	-	-



Flamingo Neon (PPAF)

Timing	Flower date	Black cloth response	Habit	Vigor
Mid	9/26	8 weeks	European	Medium/short

Earlier flowering and brighter color than Flamingo Pink, but with slightly smaller flowers and less vigor. Flamingo Neon is best for 8-in. and smaller containers. Slow, with marginal uniformity in black cloth.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	X	-	X
Black cloth	-	-	-	-	-	-	-



Ed's Pick

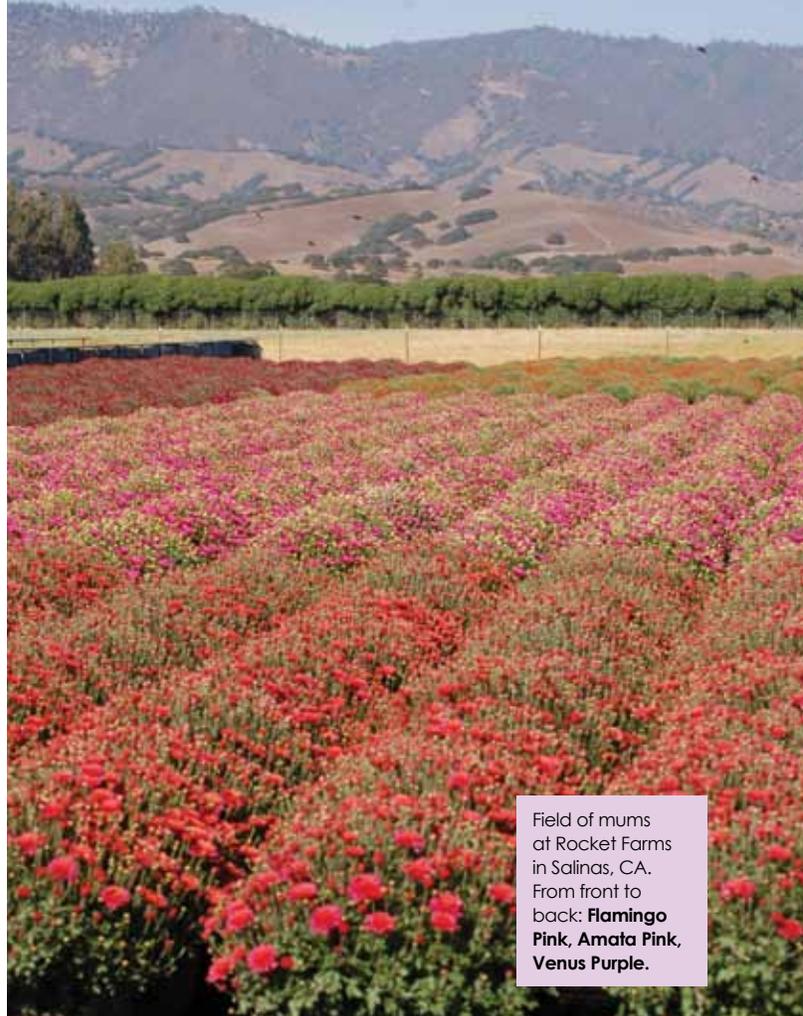


Flamingo Pink (PP20,589)

Timing	Flower date	Black cloth response	Habit	Vigor
Late	9/28	8 weeks	European	Medium

A popular variety with bright coral-pink color, reliable growth habit and long-lasting flowers. Flamingo Pink is adaptable to all container sizes. Best for natural season flowering, but with the cool flower color, it is sometimes used in Northern black cloth.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	X	X	X
Black cloth	-	-	-	-	-	-	-



Field of mums at Rocket Farms in Salinas, CA. From front to back: Flamingo Pink, Amata Pink, Venus Purple.



Maia Coral (PP15,438)

Timing	Flower date	Black cloth response	Habit	Vigor
Late	9/30	7 weeks	Semi-upright	Medium/tall

Expect very large flowers, vigorous growth and bright coral-pink flower color. Maia Coral is best in 8-in. and larger containers. Plants are very showy when half to two-thirds of the flowers are open. Color retention and keeping quality are fair.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	-	X	X	X	X	-	-
Black cloth	-	X	X	X	-	-	-



Perfectly Pink (PPAF)

Timing	Flower date	Black cloth response	Habit	Vigor
Mid	9/23	7 weeks	Mounded	Short

With large, two-tone flowers and a tidy growth habit, Perfectly Pink perfectly fills the mid-September market for pink garden mums. This variety flowers a week after Calisto Pink, with better flower form, improved color and longer-lasting flowers.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	-	-	X
Black cloth	X	X	-	-	-	-	X



Pink Frenzy (PPAF)

Timing	Flower date	Black cloth response	Habit	Vigor
Mid	9/26	7 weeks	Mounded	Medium

The boldest, brightest pink mum ever! Pink Frenzy is easy to size up and grows best in gallon and larger containers. Excellent color retention, even in Texas trials. Prompt and uniform in black cloth. Apply late PGR to control peduncle stretch.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	-	X	X	X	X	X	-
Black cloth	-	X	X	X	X	X	-



NEW 2014 Pizzazz Purple

Timing	Flower date	Black cloth response	Habit	Vigor
Late	9/30	7 weeks	Mounded	Medium

Intense flower color with very good color retention – better than Venus. Prolific and uniform flowering response greatly upgrades Delphi. Pizzazz Purple has excellent rain tolerance and long-lasting flowers, making it a solid landscape choice. Timely response in black cloth crops.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	X	-	X
Black cloth	X	X	X	-	-	-	-



Plum Crazy (PPAF)

Timing	Flower date	Black cloth response	Habit	Vigor
Late	10/2	7 weeks	Semi-upright	Medium

Color sells – and Plum Crazy is all about the color! Vibrant plum-sangria decorative flowers are unique among today's garden mums. May display an open center when mature. Semi-upright growth habit and dark, glossy foliage.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	-	-	-	-
Black cloth	-	-	-	-	-	-	-



NEW 2014 Purple Majesty (PPAF)

Timing	Flower date	Black cloth response	Habit	Vigor
Very late	10/9	7 weeks	European	Medium

Exceptionally rich and saturated flower color! Excellent growth habit, fantastic flower count and great uniformity provide a quality product in any size container. Flowers after Venus and before the Avalons. Could become the best of all purples in the early October market.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	X	X	X
Black cloth	-	-	-	-	-	-	-



Purple Passion

Timing	Flower date	Black cloth response	Habit	Vigor
Very late	10/8	8 weeks	European	Medium/short

Small, decorative duplex flowers with smooth lavender color. Ball-shaped plants are very prolific and uniform in flowering response. Use Purple Majesty to upgrade the color, flower form and growth habit of Purple Passion.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	–	–	X
Black cloth	–	–	–	–	–	–	–



Perfectly Pink features a tidy growth habit that's great for decorative containers.



Ed's Pick



Stellar Purple (PPAF)

Timing	Flower date	Black cloth response	Habit	Vigor
Mid	9/19	7 weeks	European	Medium/short

One of our top-selling purples, with phenomenal flower counts, great color and excellent uniformity. Stellar Purple can be used in black cloth and natural season flowerings. Note: Cuttings can bud prematurely and benefit from early Florel applications and proper fertilizer levels.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	X	–	X
Black cloth	X	X	X	X	–	–	X



Ed's Pick



Venus Purple (PP14,378)

Timing	Flower date	Black cloth response	Habit	Vigor
Late	10/3	7 weeks	European	Medium

One of our most popular varieties, year after year. Large, dark purple decorative flowers top round, ball-shaped plants with strong, flexible stems and dark foliage. Use Venus Purple in all size pots for Spring, Summer or Fall crops.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	X	X	X
Black cloth	X	X	X	X	X	X	X

Red



Rick Ouding
at Kalamazoo
Specialty Plants,
Kalamazoo, MI,
with a super Five
Alarm Red.



Avalon Red (PPAF)

Timing	Flower date	Black cloth response	Habit	Vigor
Very late	10/15	8 weeks	Mounded	Medium

The rich red decorative of the Avalon family. Avalon Red has large flowers for special appeal and good color retention except in warm finishing areas. Adaptable to all pot sizes, it grows slowly until early September when it really takes off!

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	X	X	X
Black cloth	X	X	X	X	–	–	X



Eternal Red (PPAF)

Timing	Flower date	Black cloth response	Habit	Vigor
Very late	10/15	8 weeks	Mounded	Medium/short

Deep red flower color and dark green foliage present a classic look. Eternal Red is a strong, sturdy plant with excellent color retention. It tolerates frost and takes heavy Fall rains with no problems. Slow in black cloth flowerings.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	–	–	X
Black cloth	X	X	–	–	–	–	–

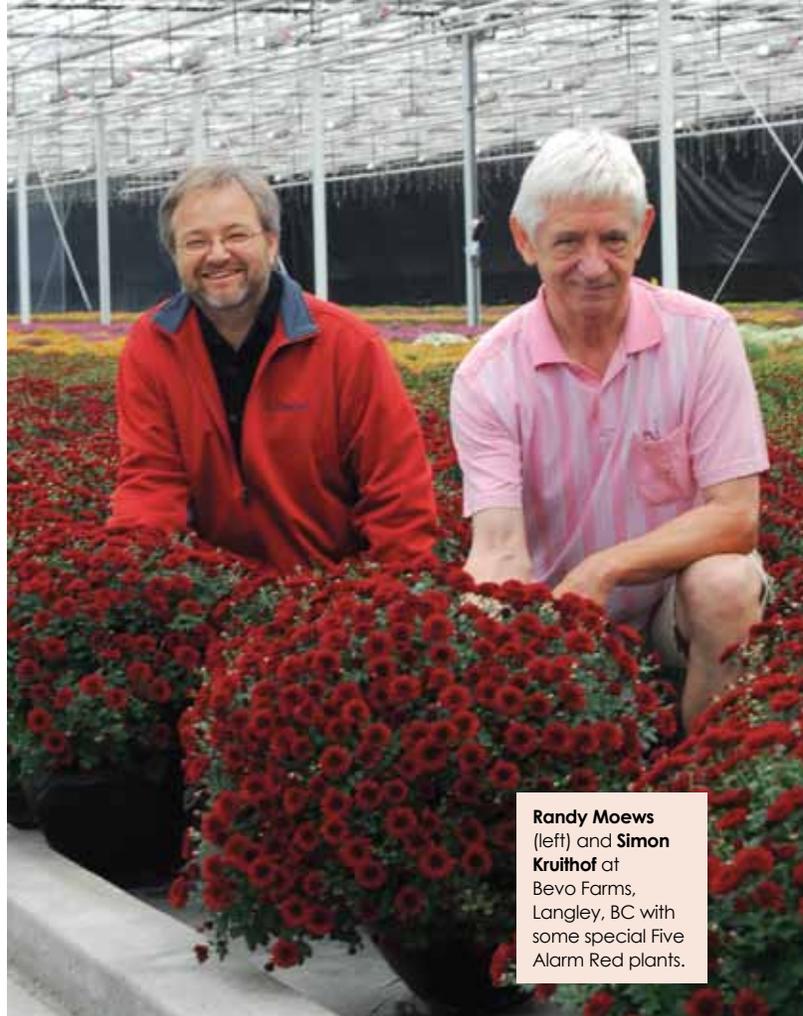


Fame Red

Timing	Flower date	Black cloth response	Habit	Vigor
Mid	9/18	6 weeks	European	Medium

Dark red daisy with uniform flowering and a full canopy of flowers. Fame Red features a rounded habit, flexible stems and dark foliage. Because it has only average keeping quality, it is not suitable for landscaping.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	–	–	–
Black cloth	X	X	X	–	–	–	–



Randy Moews (left) and **Simon Kruthof** at Bevo Farms, Langley, BC with some special Five Alarm Red plants.



Ed's Pick



Five Alarm Red (PP19,791)

Timing	Flower date	Black cloth response	Habit	Vigor
Early	9/14	6 weeks	Mounded	Medium

Our earliest-to-flower red decorative for Fall has superb color and very good color retention. Flowering uniformity is average. Some early crown buds help with early sales. Best in 6-in. and larger pots, for Spring, Summer or Fall flowerings. Early Florel applications improve uniformity.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	X	X	X
Black cloth	X	X	X	X	X	X	–



Flamingo Cranberry (PPAF)

Timing	Flower date	Black cloth response	Habit	Vigor
Late	9/28	8 weeks	European	Medium

Color sport of Flamingo Pink with the same excellent growth habit, nice flower size and slow-to-open flowers. The flower color is truly unique in garden mums: red tinged with gold and a wisp of pink. Try it – your customers will love it!

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	X	X	X
Black cloth	–	–	–	–	–	–	–



Grandeur Red (PP19,816)

Timing	Flower date	Black cloth response	Habit	Vigor
Mid	9/20	7 weeks	European	Medium

Dark red flower color, dark green foliage and a tidy growth habit. Prompt response and excellent uniformity in black cloth crops. High flower counts and great uniformity for Fall flowerings. Best in Northern crops as high temperatures during flowering cause excessive fading.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	X	X	X
Black cloth	X	X	X	-	-	-	X



Jenny Wren Red (PP10,213)

Timing	Flower date	Black cloth response	Habit	Vigor
Mid	9/25	8 weeks	Spreading	Medium

Spreading plants size up readily but have below-average uniformity. The flower color, color retention, growth habit and flower count are vastly upgraded by Radiant Red. Primarily grown for early-to-flower crown buds that can provide for early September sales.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	-	X	X	X	X	X	-
Black cloth	-	-	-	-	-	-	-

Ed's Best Reds for Season Long Sales!

Finally – a winning lineup of quality red garden mums that spans the entire natural flowering season! Rich colors, excellent habits, prolific flowering: It's all here.



Five Alarm Red Saleable
Early September



Radiant Red Mid September



Red Ryder Late September



Red Rover Early October



Eternal Red Mid October



Manakin Red (PP11,521)

Timing	Flower date	Black cloth response	Habit	Vigor
Late	9/27	8 weeks	European	Medium

A standby for many years. Easy to size up and develops into ball-shaped plants. Flowers may develop open centers. Manakin Red is now upgraded by Red Ryder's improved flower color and flower form, darker foliage and significantly improved keeping qualities.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	X	X	X
Black cloth	X	X	X	X	X	X	X



Ed's Pick

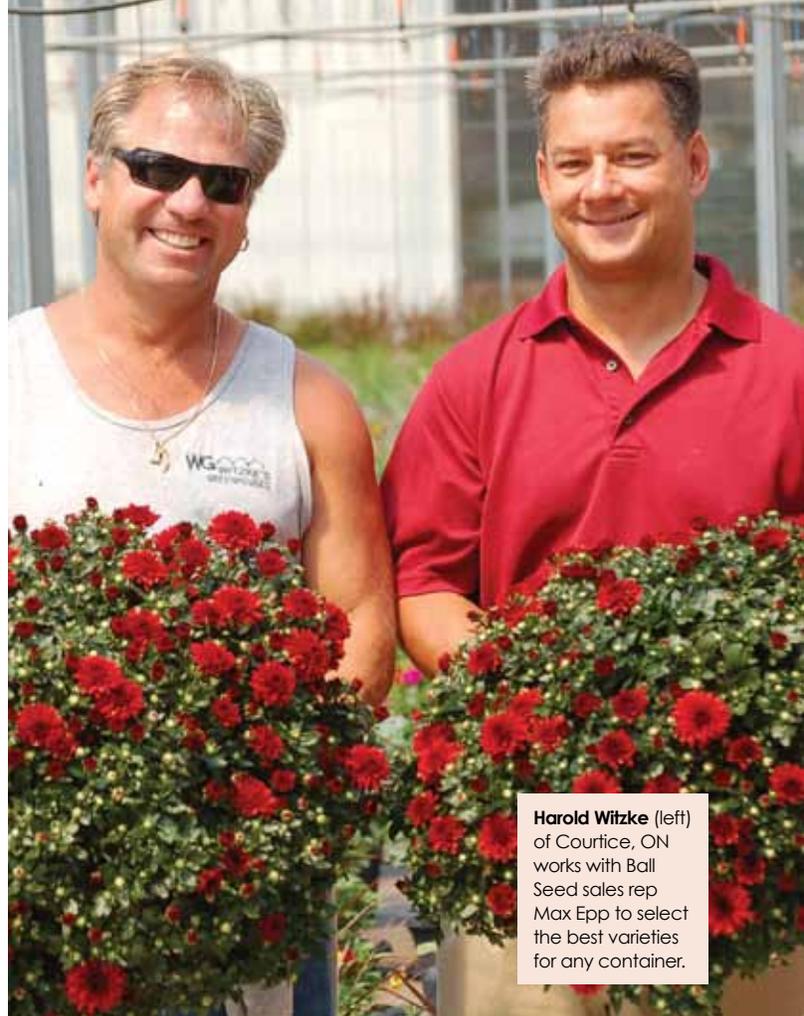


Radiant Red (PPAF)

Timing	Flower date	Black cloth response	Habit	Vigor
Mid	9/25	7 weeks	European	Medium

A "must-have" variety for mid-September sales! Dark red decorative flowers have superb color retention and rain/frost tolerance. Spherical plants have strong yet flexible stems with dark foliage. Best used in 8-in. and larger containers. Use PGR in black cloth crops.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	-	X	X	X	X	X	-
Black cloth	-	X	X	X	X	X	-



Harold Witzke (left) of Courtyce, ON works with Ball Seed sales rep Max Epp to select the best varieties for any container.



Red Alert (PPAF)

Timing	Flower date	Black cloth response	Habit	Vigor
Very late	10/11	7 weeks	European	Short

Strong red flower color with excellent color retention, even in Texas. Red Alert is compact, so is best grown in smaller pots or allowed extra growing time to size up. Red Rover (earlier), Eternal Red (later) and Avalon Red (later) are easier to grow.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	-	-	-
Black cloth	-	-	-	-	-	-	-



Ed's Pick

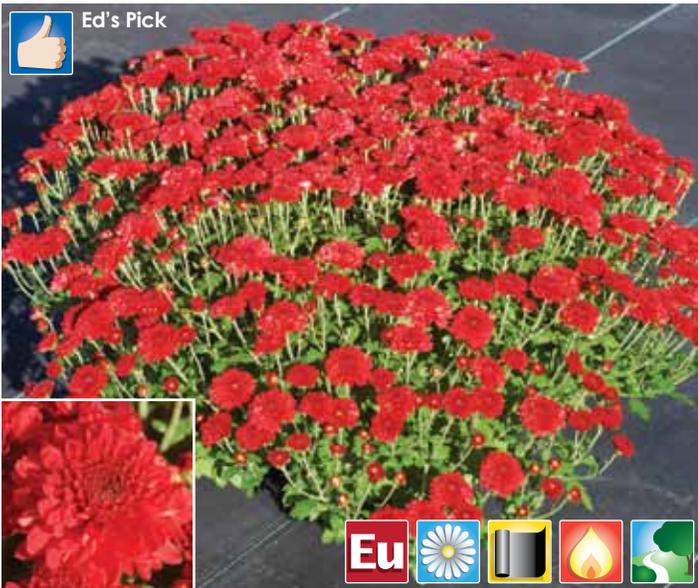


NEW 2014 Red Hots (PPAF)

Timing	Flower date	Black cloth response	Habit	Vigor
Mid	9/22	7 weeks	European	Medium

Bright red flower color, full and productive plants with excellent color retention. Takes the heat, even in the deep South, with no significant fading. Upgrades Stellar Red for flower size and color retention. Extremely promising in black cloth trials: fast and uniform.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	X	X	X
Black cloth	X	X	X	X	-	-	X



Red Rover (PPAF)

Timing	Flower date	Black cloth response	Habit	Vigor
Very late	10/8	7 weeks	European	Medium

Bright red decorative follows Red Ryder for strong early October sales. Red Rover delivers solid performance in black cloth crops. Can be slightly compact in the largest containers. Better vigor than Red Alert.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	X	X	X
Black cloth	X	X	X	-	-	-	X

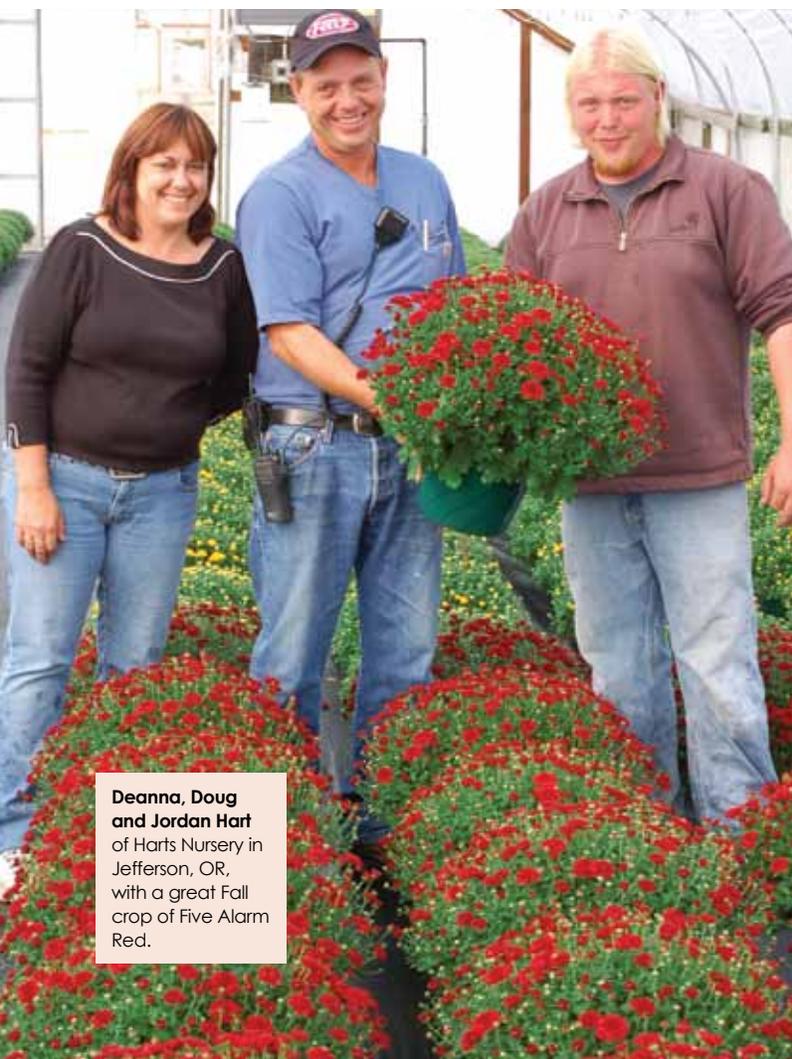


Red Ryder (PPAF)

Timing	Flower date	Black cloth response	Habit	Vigor
Late	9/28	8 weeks	European	Medium

Profuse, dark red decorative flowers with fantastic keeping quality! Plants size up readily with strong, flexible stems. Continues the flow of quality red decoratives into October. Slow in black cloth flowerings, but has excellent color and habit. Not for Spring flowering.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	X	X	X
Black cloth	-	X	X	X	-	-	-



Deanna, Doug and Jordan Hart of Harts Nursery in Jefferson, OR, with a great Fall crop of Five Alarm Red.



Stellar Red

Timing	Flower date	Black cloth response	Habit	Vigor
Mid	9/19	7 weeks	European	Medium/short

A prolific, medium-red sport of Stellar Purple. Stellar Red is similar in uniformity and growth habit to Stellar Purple, with about 10% less vigor. Flower color may fade in high temperatures. Benefits from early Florel applications to minimize early budding.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	X	-	X
Black cloth	X	X	X	-	-	-	-

White



Aspen White 12" hanging baskets at Lou Davino Greenhouses in Hightstown, NJ create excitement and sales at retail.

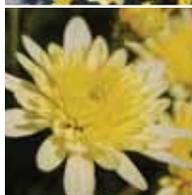


Aspen White (PPAF)

Timing	Flower date	Black cloth response	Habit	Vigor
Early	9/13	6 weeks	Mounded	Medium

Our earliest decorative white to kick off the Fall mum season. Aspen White combines clean white flower color with good decorative flower form. Strong, productive plants have medium green foliage, good flower counts and mounded growth habit.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	–	–	X
Black cloth	X	X	X	–	–	–	X



Avalon White (PPAF)

Timing	Flower date	Black cloth response	Habit	Vigor
Very late	10/15	8 weeks	Mounded	Medium/short

Excellent mounded plants are covered with large decorative flowers. Flowers commonly have a slight pink tinge. Avalon White is similar to all Avalons in growth habit, flowering response, flower size and very dark foliage. Plants grow slowly at first and take off early to mid-September.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	X	–	X
Black cloth	X	X	X	X	–	–	X



NEW 2014 **Celestial White** (PPAF)



Timing	Flower date	Black cloth response	Habit	Vigor
Mid	9/20	6 weeks	European	Medium

No ivory centers, just pure white throughout. Easy to grow, flowers prolifically and very uniformly. It performed well in all of our trials in all areas except cool coastal California. Upgrades Crete for flower size, uniformity and keeping quality.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	X	–	X
Black cloth	X	X	X	–	–	–	X



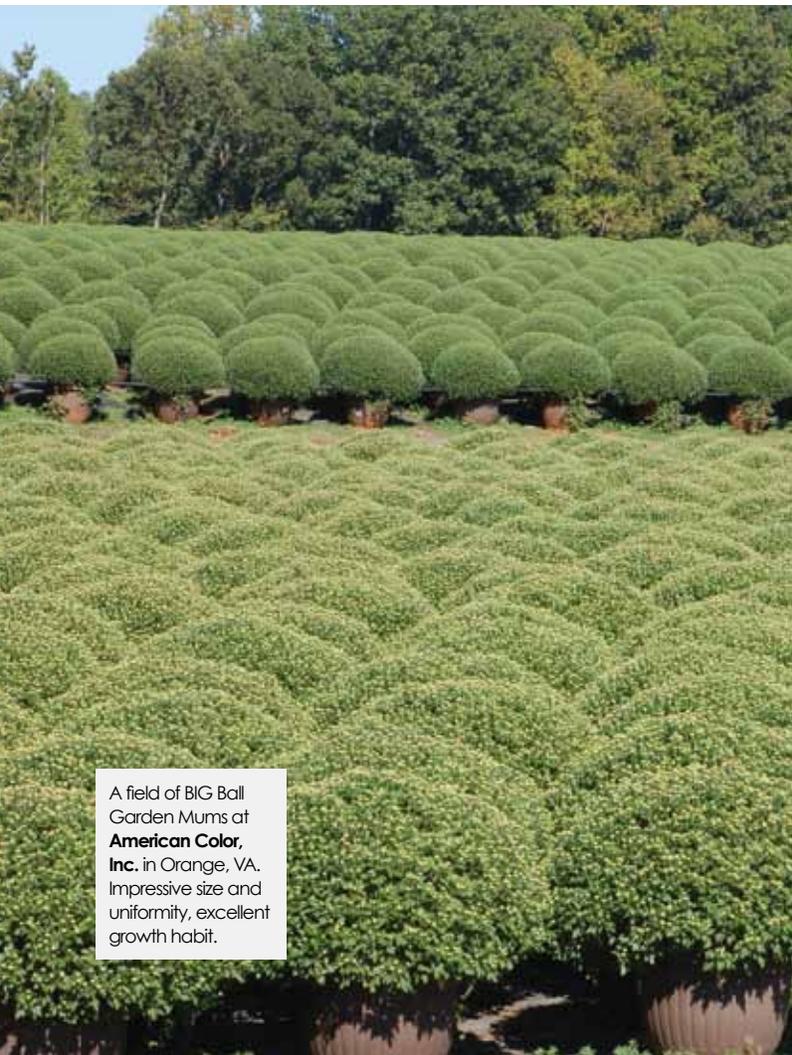
Crete White (PPAF)



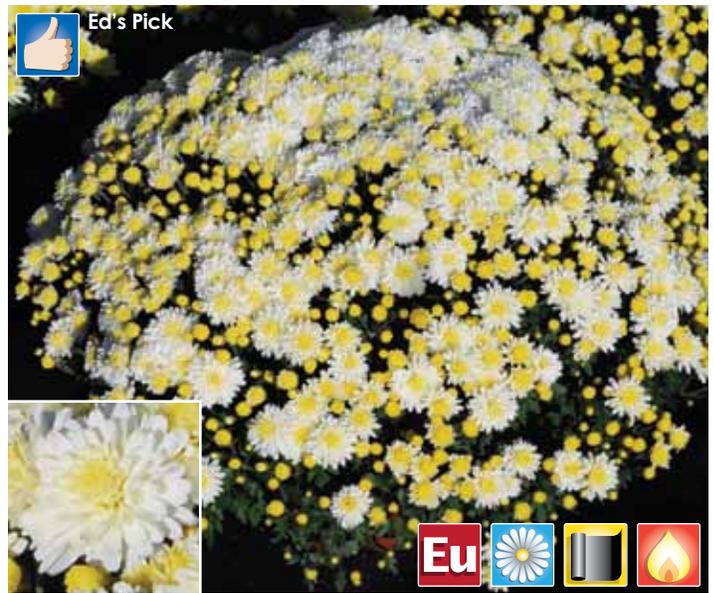
Timing	Flower date	Black cloth response	Habit	Vigor
Mid	9/24	7 weeks	European	Medium

Easy to size up and produces an amazing quantity of flowers. Uniformity of response and overall keeping quality are average. Use Starburst White or Moonglow White to upgrade in black cloth; use Starburst or Celestial White to upgrade in natural season production.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	X	–	–
Black cloth	X	X	X	–	–	–	–



A field of BIG Ball Garden Mums at **American Color, Inc.** in Orange, VA. Impressive size and uniformity, excellent growth habit.



Dove White (PPAF)



Timing	Flower date	Black cloth response	Habit	Vigor
Very late	10/12	8 weeks	European	Medium/short

Features European traits of prolific and uniform flowering, flexible stems and great plant habit. Flowers a week after Star White in the Fall to maintain a high-quality sequence of varieties through early October. Slow, but with excellent habit and production in black cloth.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	–	–	X
Black cloth	X	X	X	X	–	–	X



Grandeur White (PP19,815)

Timing	Flower date	Black cloth response	Habit	Vigor
Early	9/15	6 weeks	European	Medium

This early white decorative has good vigor and uniformity. Grandeur White is best in natural season crops and in 6-in. and larger pots. Moonglow White offers better strength and more spread.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	X	–	–
Black cloth	X	X	X	–	–	–	–



Garden Mums
and Intenz
Celosia are great
companions
and generate
increased Fall
sales.



Moonglow White (PPAF)

Timing	Flower date	Black cloth response	Habit	Vigor
Early	9/14	7 weeks	European	Medium

Excellent ball-shaped plants have dark foliage and strong, flexible stems. Large flowers are highlighted with ivory tones in the center. Moonglow White is dependable and productive in black cloth and natural season programs.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	X	X	X
Black cloth	X	X	X	X	–	–	X



Pearly White (PPAF)

Timing	Flower date	Black cloth response	Habit	Vigor
Very late	10/8	8 weeks	European	Medium/tall

Prolific, strong and well-suited to larger pot production. Pearly White features pure white flowers, dark foliage and a European-type growth habit in Fall crops. Slow and lacks uniformity in Spring and Summer flowering crops.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	–	X	X	X	X	X	X
Black cloth	–	X	X	X	X	–	–

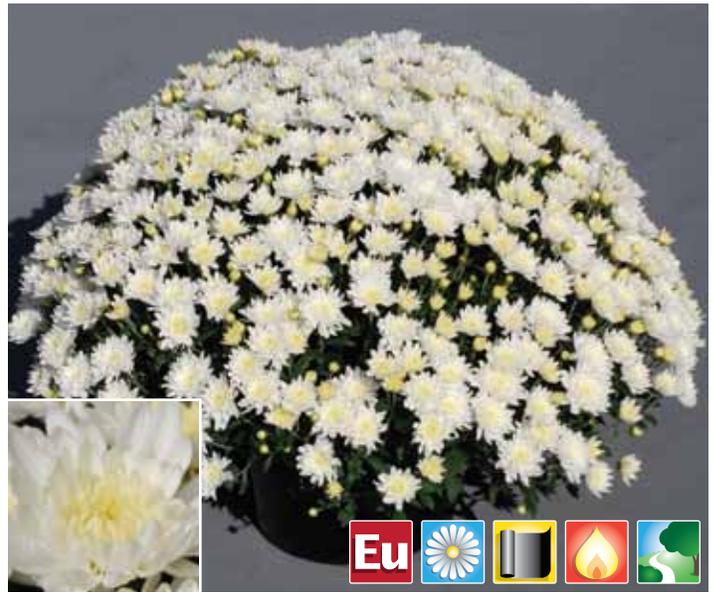


Sparkle White (PP20,525)

Timing	Flower date	Black cloth response	Habit	Vigor
Mid	9/26	7 weeks	European	Short

Snow-white daisy offers beautiful flower form, good flower size and better-than-average keeping quality for a daisy. Plants are strong and a bit compact, with luxuriant dark foliage. Sparkle White is reliable in Spring and Summer-flowering crops. Not suitable for large pots.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	-	-	X
Black cloth	X	X	X	-	-	-	-

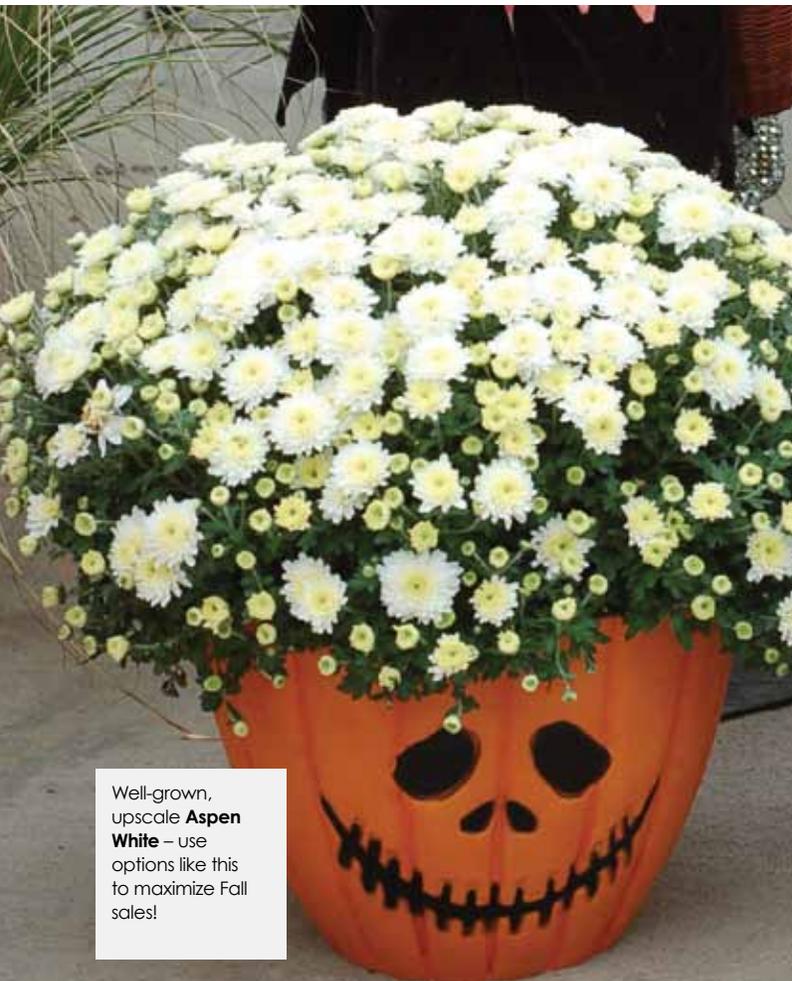


Star White (PPAF)

Timing	Flower date	Black cloth response	Habit	Vigor
Late	10/5	7 weeks	European	Medium

Features European traits of prolific flowering and excellent uniformity of response. Medium to small flowers are bright white with slight ivory contrast in the center. Almost-spherical growth habit is well-suited to all types of containers. Less vigorous than Pearly White.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	-	-	X
Black cloth	X	X	X	-	-	-	-



Well-grown, upscale **Aspen White** – use options like this to maximize Fall sales!



Ed's Pick



Starburst White (PP20,473)

Timing	Flower date	Black cloth response	Habit	Vigor
Mid	9/22	7 weeks	European	Medium/short

Prolific and extremely uniform in black cloth and natural season crops. Starburst White upgrades Crete White with far better uniformity, larger flowers and more attractive foliage. Unique flower form features quilled petals, often tipped with a "spoon". Excellent spreading plants.

	4"	6"	8"	10"	12"	½ bushel	H.B.
Natural season	X	X	X	X	X	X	X
Black cloth	X	X	X	-	-	-	X

16 Steps to Mums Success

1 Rooted cuttings/liners are generally planted late May to late June. Without lights or shading to control day length these will naturally flower mid September to mid October depending on variety. For the natural flowering date of specific varieties see pages 34-35 or visit ballseed.com.

2 Plant cuttings as soon as they arrive. They may be stored for one or two days in a cooler at 33°-40°F (0.5°-4.4°C) if necessary.

3 Always plant cuttings in moist media.

4 Use a good, loose, well-drained soilless growing media, which provides a solid anchor for the root system.

5 Plant one cutting to a 6.5 to 8-in. (17-28-cm) pot or a 1 to 2-gallon nursery container.

6 Plant cuttings deep enough to just cover the root ball.

7 If night temps are below 62-65°F (17-18°C) outside, start plants in the greenhouse to maintain adequate temperature until established.

8 Grow in full light.

9 Mist lightly the first few days if plants start to wilt.

10 Water in with liquid feed, and continue with a program of constant feed. A 20-10-20 or similar formulation works well. Water with clear water every 4 to 6 waterings.
 • Provide high level of constant feed (300-400 ppm) for the first 6 weeks or so of growing time.

Do not let plants wilt.

- Fertilizer concentration may be reduced to 200-250 ppm for the next 3 to 4 weeks of the growing period.
- Feed at a lower concentration (50-100 ppm) for the last 3 to 4 weeks.
- Clear water can be used for the last week or two to finish the crop.

11 Pinching is not required.

12 Space pots so plants do not touch. Adequate spacing is important to produce quality plants.

13 Quality crops can be grown without the use of growth retardants. If needed, the following are the ones most commonly used. Always follow labeled usage requirements.
 • B-Nine is the traditional growth regulator for garden mums.

- Bonzi is quite effective, but must be used carefully to avoid excessive stunting.
- Sumagic is very effective, but results have been variable.
- Florel is used to increase branching, prevent premature budding, and delay flowering.

14 Insect pests that may attack garden mums are aphids, mites, caterpillars, leafminers, whiteflies and thrips.

15 Sanitation is key to disease prevention. The most common diseases are *Pythium*, *Fusarium*, *Rhizoctonia*, bacterial leaf spot (*Pseudomonas cichorii*), *Alternaria*, *Botrytis* and *Septoria*.

16 Take notes on what you have done, problems seen and weather conditions to make adjustments for next year.

Mammoth Mums are true perennials that bloom year after year!



Variety	Timing	Flower date	Black cloth response	Habit	Vigor
Mammoth Bronze Daisy	Late	9/29	6 weeks	Mounded	Medium
Mammoth Coral Daisy	Early	9/17	6 weeks	Mounded	Medium
Mammoth Lavender Daisy	Early	9/7	6 weeks	Mounded	Medium
Mammoth Red Daisy	Early	9/14	6 weeks	Mounded	Medium
Mammoth Yellow Quill	Early	9/11	6 weeks	Mounded	Tall

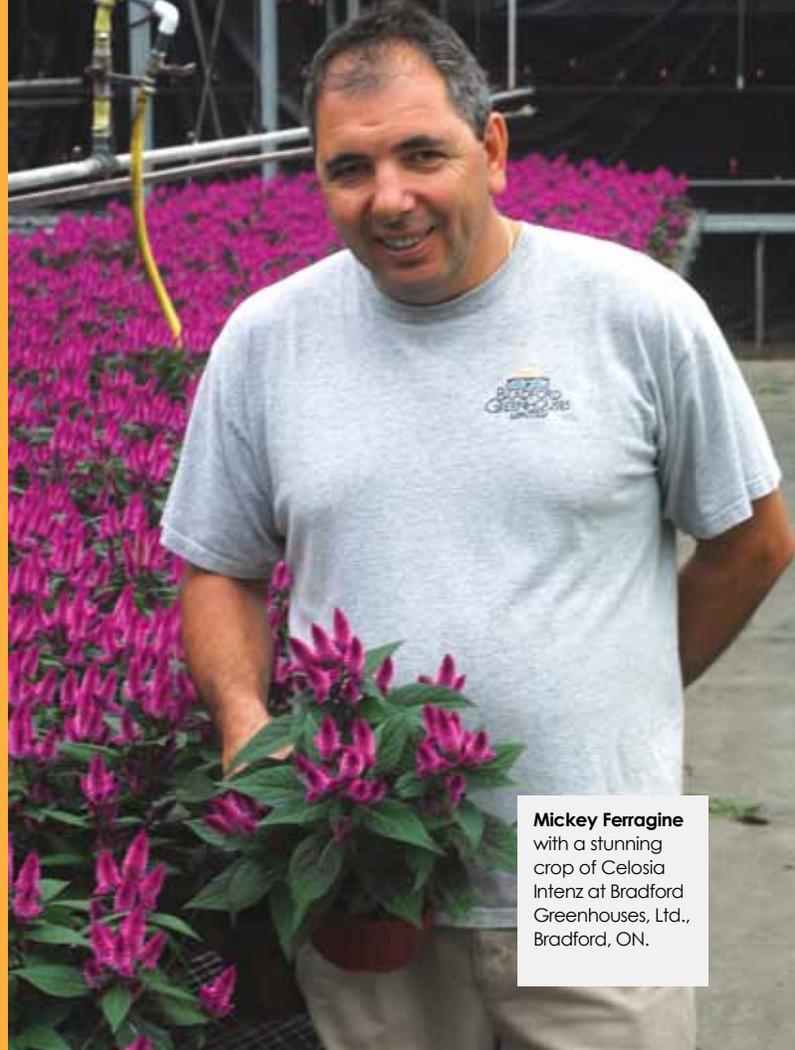
- Overwinter to an amazing -30°F/-34°C!
- Huge, high-impact garden displays.
- Low-maintenance in gardens and landscapes.

Ball for Fall

When customers come looking for Fall color, give them more than they expect. Ball has a wide selection of annuals, grasses and perennials that you can grow right alongside your mums for sales as brisk as the Autumn air! You can see them all at our Annual Ball for Fall event, held in September in New Jersey. Watch ballseed.com for details.

Try the following for extended sales at retail and brilliant color right until frost:

- Celosia Ice Cream, Intenz and Twisted Red
- Coreopsis
- Dianthus
- Fall Asters
- Flowering Cabbage and Kale
- Grasses
 - Carex Red Rooster, Bronco and Phoenix Green
 - Eragrostis Wind Dancer
 - Pennisetum setaceum* Rubrum
- Helium Dakota Gold
- Hibiscus Mahogany Splendor
- Lavender Lavance Purple
- Lettuce
- Marigold Taishan® and Garden Joy
- Ornamental Millet
- Ornamental Peppers
- Pansy Cool Wave® and Matrix®
- Plectranthus Mona Lavender
- *Rudbeckia hirta*
- Sunflowers
 - Ballad (large pots)
 - Miss Sunshine (smaller pots)
 - Sensation
- Swiss Chard
- Viola Sorbet®
- Zinnia Zahara®



Mickey Ferragine
with a stunning
crop of Celosia
Intenz at Bradford
Greenhouses, Ltd.,
Bradford, ON.



2014-2015 Ball Garden Mum Usage

Variety	Spring Flowering	Black Cloth Crop	Large Pots and Bushel Baskets	Hanging Baskets	Southern Heat Tolerance
Avalon Yellow	●	●	●	●	●
NEW Buttercup Yellow			●	●	
Dandelion Wine	●	●	●		
Eureka Yellow		●		●	●
Florina Yellow	●	●		●	●
Gold Ball		●		●	●
Gold Rush Yellow	●	●	●	●	●
Goldcrest Yellow		●	●	●	●
Goldfinch Yellow				●	●
Goldmine Yellow		●	●	●	●
Grandeur Yellow	●	●	●	●	●
NEW Honeyblush Yellow			●	●	
NEW Katelli Yellow	●	●		●	●
Sundance Yellow	●	●	●	●	●
Sunny Day	●	●	●	●	●
Sunrise Yellow			●	●	●
Yellow Tang	●	●	●	●	●
Yellowstone	●	●	●	●	●
Atomic Orange	●		●	●	●
Autumn Glow Bronze		●	●	●	●
Avalon Orange	●	●	●	●	●
Bedazzled Bronze	●	●		●	●
Beryl Orange		●		●	
Blazing Orange	●	●	●	●	●
Caesar Bronze		●			
Early Autumn Bronze		●			
Echo Bronze		●	●		●
Emberglow Orange			●	●	●
Flamingo Pineapple			●	●	
Harvest Bronze	●	●		●	
Homer Orange					
Katelli Bronze	●	●		●	●
Orange Crush	●	●	●		
Outrageous Orange		●	●	●	
NEW Perfectly Orange		●		●	●
Petit Orange	●	●	●	●	●
NEW Pumpkin Pie		●	●		●
Roadrunner Bronze			●	●	●
Sunset Orange	●	●	●	●	●
Twilight Bronze	●	●		●	

Variety	Spring Flowering	Black Cloth Crop	Large Pots and Bushel Baskets	Hanging Baskets	Southern Heat Tolerance
Adonis Purple		●	●	●	●
Amata Pink			●	●	
Amphion Purple	●	●	●	●	●
Avalon Pink	●	●	●	●	●
Avalon Purple	●	●	●	●	●
Avalon Salmon	●	●	●	●	●
NEW Brilliance Pink				●	
Calisto Pink					
Delphi Purple					
Flamingo Neon				●	●
Flamingo Pink			●	●	●
Maia Coral					●
Perfectly Pink		●		●	●
Pink Frenzy	●	●	●		●
NEW Pizzazz Purple		●		●	●
Plum Crazy	●				
NEW Purple Majesty			●	●	●
Purple Passion				●	
Stellar Purple	●	●		●	●
Venus Purple	●	●	●	●	●
Avalon Red	●	●	●	●	
Eternal Red	●	●		●	●
Fame Red		●			
Five Alarm Red	●	●	●	●	●
Flamingo Cranberry			●	●	
Grandeur Red		●	●	●	
Jenny Wren Red			●		
Manakin Red		●	●	●	●
Radiant Red		●	●		●
Red Alert					●
NEW Red Hot's				●	●
Red Rover	●	●	●	●	●
Red Ryder		●	●	●	●
Stellar Red	●	●		●	●
Aspen White	●	●		●	●
Avalon White	●	●	●	●	●
NEW Celestial White		●		●	
Crete White		●			●
Dove White	●	●		●	●
Grandeur White		●		●	
Moonglow White	●	●	●	●	●
Pearly White		●	●	●	●
Sparkle White	●	●		●	●
Star White	●	●		●	●
Starburst White	●	●	●	●	●

Every Ball Garden Mum has been evaluated in our North American trials for strong natural season performance. We are also including information here for you to create specialty programs.

Ball Garden Mum Variety Natural Season Flowering Sequence

Early 9/8 to 9/17

Flower date	Variety	Black cloth response	Flower form	Vigor
Sept. 8	Goldmine Yellow 	6 weeks	Decorative	M
Sept. 8	Sunrise Yellow 	7 weeks	Decorative	M
Sept. 13	NEW 2014 Buttercup Yellow	7 weeks	Decorative	M
Sept. 14	Goldcrest Yellow	7 weeks	Decorative	M
Sept. 15	Grandeur Yellow	7 weeks	Decorative	M
Sept. 15	NEW 2014 Katelli Yellow	6 weeks	Decorative	S

Sept. 12	Roadrunner Bronze	6 weeks	Decorative	M
Sept. 14	Homer Orange	6 weeks	Decorative	M
Sept. 15	Early Autumn Bronze	6 weeks	Daisy	S
Sept. 17	Katelli Bronze	6 weeks	Decorative	S

Sept. 15	Calisto Pink	6 weeks	Decorative	M
Sept. 16	NEW 2014 Brilliance Pink	8 weeks	Decorative	M

Sept. 14	Five Alarm Red 	6 weeks	Decorative	M
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Sept. 13	Aspen White	6 weeks	Decorative	M
Sept. 14	Moonglow White 	7 weeks	Decorative	M
Sept. 15	Grandeur White	6 weeks	Decorative	M

Ed's Picks

Guide to Using the Ball Garden Mum Variety Chart

Use the "Flower date" column to put together a natural season program. NOTE: Bloom dates shown are average flowering dates (half-open flowers) for Eastern and Midwestern regions and represent the time when flowers are at Stage 3 (see photo on facing page). Actual bloom dates will vary by geographic area. Since dates are relative to each other, growers can sequence the varieties for production.

Use the "Black cloth response" column to put together a Summer black cloth program.

Mid 9/18 to 9/26

Flower date	Variety	Black cloth response	Flower form	Vigor
Sept. 18	Yellowstone 	7 weeks	Decorative	M
Sept. 20	Florina Yellow	6 weeks	Daisy	S
Sept. 23	NEW 2014 Honeyblush Yellow 	7 weeks	Decorative	M
Sept. 25	Eureka Yellow	7 weeks	Decorative	M/S

Sept. 18	Echo Bronze	6 weeks	Daisy	M/T
Sept. 21	NEW 2014 Perfectly Orange	7 weeks	Decorative	S/M
Sept. 22	Bedazzled Bronze 	7 weeks	Decorative	M/S
Sept. 24	Flamingo Pineapple	8 weeks	Decorative	M
Sept. 25	Beryl Orange	6 weeks	Decorative	M/S
Sept. 25	Pefit Orange 	7 weeks	Decorative	M

Sept. 19	Stellar Purple 	7 weeks	Decorative	M/S
Sept. 23	Perfectly Pink	7 weeks	Decorative	S
Sept. 24	Adonis Purple	7 weeks	Decorative	M
Sept. 26	Flamingo Neon	8 weeks	Decorative	M/S
Sept. 26	Pink Frenzy 	7 weeks	Decorative	M

Sept. 18	Fame Red	6 weeks	Daisy	M
Sept. 19	Stellar Red	7 weeks	Decorative	M/S
Sept. 20	Grandeur Red	7 weeks	Decorative	M
Sept. 22	NEW 2014 Red Hots 	7 weeks	Decorative	M
Sept. 25	Jenny Wren Red	8 weeks	Decorative	M
Sept. 25	Radiant Red 	7 weeks	Decorative	M

Sept. 20	NEW 2014 Celestial White	6 weeks	Decorative	M
Sept. 22	Starburst White 	7 weeks	Decorative	M/S
Sept. 24	Crete White	7 weeks	Decorative	M
Sept. 26	Sparkle White	7 weeks	Daisy	S

Need a substitute for a natural season program? Select a variety with a similar bloom date. For example, if you need a substitute for Starburst White, Crete White works well because it is also a white decorative and blooms two days later. New Celestial White is also a suitable replacement as it is a decorative white blooming two days sooner.

Need a substitute for a Summer black cloth program? Select a variety with a similar "Black cloth response" number. For example, if you need an option for Grandeur Red, both Radiant Red and Stellar Red will work well since they are both red decoratives with a 7-week response time. When working with black cloth crops, please be sure the variety is suitable for use. Refer to variety copy in this catalog.

Late 9/27 to 10/5

Flower date	Variety	Black cloth response	Flower form	Vigor
Sept. 29	Dandelion Wine	7 weeks	Decorative	M/T
Sept. 30	Sundance Yellow	8 weeks	Decorative	S/M
Oct. 3	Gold Rush Yellow	7 weeks	Decorative	M/T

Sept. 28	Sunset Orange	7 weeks	Decorative	M
Sept. 30	Atomic Orange	7 weeks	Decorative	M
Oct. 2	Autumn Glow Bronze	7 weeks	Decorative	M
Oct. 2	Harvest Bronze	7 weeks	Decorative	S
Oct. 2	Orange Crush	7 weeks	Decorative	M/T
Oct. 3	Outrageous Orange	7 weeks	Decorative	M

Sept. 28	Flamingo Pink	8 weeks	Decorative	M
Sept. 30	Amata Pink	7 weeks	Decorative	M
Sept. 30	Maia Coral	7 weeks	Decorative	M/T
Sept. 30	NEW 2014 Pizzazz Purple	7 weeks	Decorative	M
Oct. 2	Amphion Purple	6 weeks	Daisy	M
Oct. 2	Delphi Purple	7 weeks	Decorative	M
Oct. 2	Plum Crazy	7 weeks	Decorative	M
Oct. 3	Venus Purple	7 weeks	Decorative	M

Sept. 27	Manakin Red	8 weeks	Duplex	M
Sept. 28	Flamingo Cranberry	8 weeks	Decorative	M
Sept. 28	Red Ryder	8 weeks	Decorative	M

Oct. 5	Star White	7 weeks	Decorative	M
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Very Late 10/6 to 10/20

Flower date	Variety	Black cloth response	Flower form	Vigor
Oct. 7	Yellow Tang	7 weeks	Decorative	M
Oct. 10	Goldfinch Yellow	8 weeks	Decorative	M
Oct. 12	Gold Ball	8 weeks	Decorative	S
Oct. 15	Avalon Yellow	8 weeks	Decorative	M
Oct. 17	Sunny Day	7 weeks	Decorative	M

Oct. 7	Caesar Bronze	7 weeks	Daisy	M
Oct. 8	Twilight Bronze	7 weeks	Decorative	M
Oct. 11	NEW 2014 Pumpkin Pie	7 weeks	Decorative	M/T
Oct. 12	Blazing Orange	7 weeks	Decorative	M
Oct. 15	Avalon Orange	8 weeks	Decorative	M
Oct. 16	Emberglow Orange	8 weeks	Decorative	M

Oct. 8	Purple Passion	8 weeks	Decorative	S
Oct. 9	NEW 2014 Purple Majesty	7 weeks	Decorative	M
Oct. 15	Avalon Pink	8 weeks	Decorative	M
Oct. 15	Avalon Purple	8 weeks	Decorative	M
Oct. 15	Avalon Salmon	8 weeks	Decorative	M

Oct. 8	Red Rover	7 weeks	Decorative	M
Oct. 11	Red Alert	7 weeks	Decorative	S
Oct. 15	Avalon Red	8 weeks	Decorative	M
Oct. 15	Eternal Red	8 weeks	Decorative	M/S

Oct. 8	Pearly White	8 weeks	Decorative	M/T
Oct. 12	Dove White	8 weeks	Decorative	M/S
Oct. 15	Avalon White	8 weeks	Decorative	M/S

A Note on Flower Dates

Ever wonder what "flower date" means? The plant on the right gives you a visual of what "flower date" represents. The flowers are fresh – not too open, not too tight, approximately at the 50% open stage of development. If you are a wholesale grower, you likely ship around Stage 1, represented by the plant on the left. These plants are "shippable" approximately 7 to 10 days prior to our "flower date."

Stage 1 (Cracking Color)



Stage 3 (Flower Date)



Keys to Producing Quality Garden Mums

Start with quality cuttings of the best varieties. Ed's Picks (listed on the inside front cover of this catalog) are varieties we have selected to be the very best for most garden mum programs.

As soon as possible after receiving cuttings, plant into a moist, well-drained media.

Keep well-fertilized, starting at the day of planting and reducing feed as the crop matures. Feed is not needed as buds show some color.

Plants should not be allowed to wilt.

Provide adequate space for the plant to grow to its ultimate size without crowding.

Spacing Requirements for Garden Mums

Approximate Container Size	Plants per Pot (ppp)	Final Spacing (on center)
Cell pack	1	Pack to pack
4-in. (10-cm) pot	1	4 to 6 in. (10 to 15 cm)
4.5-in. (11-cm) pot	1	5 to 7 in. (13 to 18 cm)
5-in. (13-cm) pot	1 to 3	5 to 8 in. (13 to 20 cm)
6-in. (15-cm) pot	1 to 3	6 to 12 in. (15 to 30 cm)
6.5-in. (16-cm) pot	1 to 3	6.5 to 12 in. (16 to 30 cm)
8-in. (20-cm) pot	1 to 3	16 to 20 in. (40 to 50 cm)
10-in. (25-cm) pot	1 to 3	18 to 24 in. (45 to 60 cm)
12-in. (30-cm) pot	3 to 4	22 to 26 in. (56 to 65 cm)
14-in. (35-cm) pot	4 to 5	26 to 30 in. (65 to 75 cm)
1/2 bu. basket	4 to 5	28 to 34 in. (70 to 86 cm)
1 gallon	1 to 3	9 to 16 in. (23 to 40 cm)
2 gallon	1 to 3	18 to 24 in. (45 to 60 cm)
3 gallon	2 to 3	20 to 30 in. (50 to 75 cm)
5-in. (13-cm) pan	1 to 3	6 to 8 in. (15 to 20 cm)
8 x 5-in. (20 x 13-cm) mum pan	1 to 3	16 to 20 in. (40 to 50 cm)
12-in. (30-cm) color bowl	3 to 5	14 to 20 in. (35 to 50 cm)
14-in. (35-cm) color bowl	3 to 5	28 to 30 in. (70 to 75 cm)
6-in. (15-cm) hanging basket	1 to 3	14 to 16 in. (35 to 40 cm)
10-in. (25-cm) hanging basket	1 to 3	18 to 24 in. (45 to 60 cm)
12-in. (30-cm) hanging basket	2 to 4	26 to 28 in. (65 to 70 cm)

Upon Arrival

- Ball Garden Mum cuttings are available as both unrooted and rooted cuttings in several tray sizes, pinched and unpinched.
- All cuttings should be planted as soon as possible.
- If necessary to hold cuttings, open the boxes and check the cuttings.
- Unrooted and rooted cuttings can be stored at 34 to 40°F (1 to 4°C), being careful not to freeze.
- For rooted cuttings, place trays on a greenhouse bench, maintain a minimum temperature of 60 to 62°F (16 to 17°C), water, do not let the plants wilt and do not hold for more than 2 to 3 days.

Unrooted Cuttings

See the section on Rooting Unrooted Cuttings, page 40.

Planting

- *This is the most critical period in the production of a quality Garden Mum crop.* Most growers plant the rooted cuttings directly into the final container whenever the space is available. Be prepared – have all the containers filled and the media slightly moist.
- A lighter, well-drained media makes deeper planting less risky. In a heavier media, root loss will delay take-off, reducing the quality of the finished crop.
- Immediately after planting, water the cuttings in with fertilizer such as 20-10-20 at 250 to 300 ppm.
- It may be necessary to mist or syringe the newly planted cuttings for the first few days after planting to prevent wilting.
- If outdoor temperatures are cool (nights in the 50s°F/10 to 15°C), it is recommended that the plants be started in a greenhouse where the night temperatures can be maintained in the 60s°F (15 to 20°C), with 65°F (18°C) being ideal. Better take-off and initial growth will be seen. This is especially important when growing the earliest-flowering varieties (indicated by Early response in the descriptions).

Media

- Many soil mixes are available for growing Garden Mums, including several Ball® Growing Mixes which are excellent for Garden Mum production. Check with your Ball Seed sales rep for the appropriate mix to use in your area.
- Choose a well-drained mix, but avoid mixes that are too light and may dry out too rapidly.
- The mix must also provide enough weight to support the crop.
- The starting pH in a soil-based mix should be 6.0 to 6.5, and in a soilless mix slightly lower at 5.8 to 6.4.

Pinching

To pinch or not to pinch is the question. The answer is that either will work for natural season Fall crops. Most modern varieties do not need any pinching in natural season Fall programs. They will pinch themselves by producing little premature buds that do not develop but cause branching to occur.

Spacing

Refer to the chart at the left for specific spacing requirements.

- A key to excellent quality, spacing depends on the pot size and the desired finished product.
- Spacing plants too tightly promotes weak, stretched and poor-quality plants. Disease problems are also more likely to occur.
- Many sizes of plastic, fiber and wood containers are suitable for growing Garden Mums.
- The number of plants per pot (ppp) varies depending on the pot size and desired crop time.

Temperature

- Many times in late Spring or early Summer, cool nights may trigger premature bud formation. One cool night at 50°F (10°C) will not do this, but several days or more of cool temperatures can promote crown bud formation. This is not desirable and may cause the plants to finish too small.
- The best solution is to start the crop in the greenhouse if you are in an area that has cooler night temperatures in the Spring. However, a little crown bud formation followed by warm night temperatures will be no

problem, as the plants will go back to being vegetative and grow around the crown buds.

- If crown bud formation occurs, applications of Florel and pinching will help to promote vegetative growth. Most importantly, be sure fertility levels are high.

Heat Delay

- High day and night temperatures may cause heat delay. As temperatures increase, there is a point when chrysanthemum flower initiation and development begin to slow down. Some varieties are more sensitive than others. All efforts should be made to minimize extremely high day and night temperatures.

- Suggestions to avoid heat delay for shaded crops:
 - Start cooling very early in the morning.
 - Cool at night with a pad and fan system that pulls air under the black cloth.
 - Close the black cloth late in the day at 8 p.m. to avoid heat buildup and leave the cloth closed until 8 a.m.
 - For enhanced cooling, a computerized black cloth system may be programmed to open after the sun has set and closed before the sun comes up in the morning.
 - Cover before sunrise versus evening.

Light Intensity

- Garden Mums should be grown in full sun.
- Newly planted cuttings may need light shade for a few days until they are fully established.

Irrigation & Fertilization

- Garden Mums may be grown using overhead irrigation, sub-irrigation and drip methods. A drip irrigation system is often the best choice as it keeps the foliage dry to prevent spotting of the leaves and also reduces the chance of developing foliar disease problems.
- When irrigating, apply enough water to thoroughly wet the soil mass. At each irrigation there should be adequate water applied to drip from the container. Never allow the plant to wilt during the early stages of production.

- It is very important to fertilize immediately after planting. Watering in with a fertilizer solution is recommended. A constant liquid feed program using a 20-10-20 type of fertilizer at a rate of 250 to 350 ppm will usually work well. In some growing situations, other formulations may be better. A program of regular soil testing is the best guide to determine the optimum fertilization program.
- Slow-release fertilizers such as Osmocote, in combination with liquid feeds, may also be used.
- Once you see color in the crop, stop feeding and finish the crop with fresh water, which will improve the post-harvest shelf life.

Height Control & Growth Regulators

NOTE: *With all growth regulators we recommend an initial small-scale trial.*

- B-Nine has been used for decades for height control, and is the preferred chemical to improve the quality of a mum crop. B-Nine applications not only control height but also produce darker, greener leaves and stronger stems.
- If using unrooted cuttings, apply B-Nine at approximately 1,200 to 2,500 ppm at Day 7 after sticking the unrooted cutting.
- An application of B-Nine at 1,200 to 2,500 ppm 7 days after planting the rooted cuttings will tone the plant and reduce the possibility of stretch. This very important step helps produce strong plants with close internodes.
- An application at 5,000 ppm 10 to 14 days after the pinch may be necessary to control the more vigorous varieties, especially for greenhouse-forced Summer-flowering crops.
- B-Nine may not be necessary for most Garden Mums grown outside. Selection of varieties, proper scheduling and pinching are good alternatives to consider before relying too heavily on applications of B-Nine or any growth regulator.
- Bonzi is also a very effective chemical, but takes more skill to apply correctly. A 2 ppm drench when the plants are at the desired finished height will stop the growth. Growers must be extremely careful when using Bonzi.
- Florel has been used to promote branching, prevent premature budding and delay

flowering. We suggest applying it early in the crop cycle. A rate of 300 to 500 ppm may be used. Different varieties respond differently and growers must use caution when applying Florel. In general, an application at 500 ppm at the time of pinching, or in place of pinching, is useful in developing a quality plant with little or no delay in flowering. A later application is useful in delaying flowering for late sales.

- Mammoth Mums tend to be more vigorous. An additional application of growth retardant may be required to produce the same size plant as regular Garden Mums.

Fall-Flowering Programs

Natural Season Fall Mums

Chrysanthemums are short-day plants and initiate flower buds in response to an interaction of daylength, temperature and plant age. Traditional "natural season" Garden Mums for Fall are planted from May to early July. The time to plant depends on projected sales date, size of the container, number of cuttings per container, variety and local climatic conditions.

- Typical natural season schedule for 6 to 8-in. (15 to 20-cm) containers:
 - Plant rooted cuttings June to early July. Stick unrooted cuttings 2 to 3 weeks earlier.
 - If pinching, pinch when the plant is established.
 - Space plants at 16 to 18 in. (40 to 45 cm) for pot sizes up to 8 in. (20 cm). Space pots larger than 8 in. (20 cm) at 24 in. (60 cm).
 - Natural flowering season is September through mid-October. Refer to the Garden Mum Variety Flowering Sequence chart on pages 34-35 to determine the natural season flower date. Record keeping is critical as it enables the grower to make adjustments to the schedule from the previous season's program as needed. Carefully evaluating your Garden Mum program each year will enable you to fine-tune the planting time to produce consistent plant sizes that will flower in relatively the same time period each year.

- For example, if plants in 4.5-in. (11-cm) pots are consistently too big, make sure you have selected the less-vigorous varieties and consider planting 1 to 2 weeks later.
- If 8-in. (20-cm) pans with 1 cutting per container are consistently too small, make sure you have selected the proper variety, and consider planting 1 week earlier or possibly using 2 cuttings per container.

Key to Natural-Season Flowering

Season	Average Natural Flower Date
Early	September 8-17
Mid	September 18-26
Late	September 27-October 5
Very Late	October 6-20

Fast Crops

A "fast crop" program can enable growers to produce a quality crop even when starting later than a normal natural season program.

- A 4-in. (10-cm) crop with 1 cutting per container can be planted the last week of July until August 12 for flowering from late September to mid-October.
- A 6 to 6.5-in. (15 to 16-cm) crop with 1 cutting per container can be planted mid-July to late July.
- Larger containers such as 8-in. (20-cm) pans or 2 gallon pots can be planted July 10 to 20, but use 2 cuttings per container.
- The key to a fast crop is to not inhibit the growth in any way by stressing the plants. Do not pinch. Flowering will generally be 4 to 7 days later than a June-planted crop.
- Typical Fast Crop schedule for 6-in. (15-cm) containers:
 - Plant rooted cuttings during the third week of July.
 - Do not pinch.
 - Space plants at 16 to 18 in. (40 to 45 cm) for pot sizes up to 8 in. (20 cm). Space pots larger than 8 in. (20 cm) at 24 in. (60 cm).
 - Do not stress plants by wilting or low fertility.
 - Plants flower 7 to 10 days later than a natural season crop.

Scheduling Considerations for a Natural Season Fall Program

There are many schedules for the traditional 8-in. (20-cm), or equivalent, natural season Garden Mum, but today most growers are planting rooted cuttings between the first and fourth week of June. If you are using unrooted cuttings, add 2 to 3 weeks for rooting. For a shorter crop time, plant 2 cuttings per container. This will make a late June/mid-July planting possible.

Although many growers like to plant all their Garden Mum crop at one time and let the natural flowering time of the various varieties spread the finish time, this may not produce the most uniformly sized crop.

- Ball Garden Mums are classified into Early, Mid, Late and Very Late-flowering varieties.
- Our breeders have been working to develop more quality varieties in the earlier classes to meet demand in selected markets. These Early-flowering varieties no longer flower primarily in response to short days. The stimulus is the age of the plant, temperature and day-length. Moderate nights and warm days will promote flowering. Extremely hot nights and days will cause delay. Shortening days enhances flowering. Flowering

response times are modified by these interacting factors in the Early flowering class, making them tricky to grow. For example, if they are stressed by being allowed to dry out in the rooting trays, they may harden off enough to stop growing and form a well-developed premature bud. Optimum conditions must be provided to keep the plants growing by planting the rooted cuttings as soon as possible, keeping them warm and feeding them well. For natural season flowering, start the earlier varieties in a warm greenhouse, where temperatures and lighting can be controlled. If they are put outside and the temperatures are too cool, these varieties may be thrown into premature flowering. Spraying Florel at 500 ppm on earlier varieties may be beneficial.

- Plant the Early classes the first week of the planting season. The following weeks, start planting the Mid varieties, and then reserve the last planting weeks for the Late and Very Late varieties.
- If all the varieties were planted in the same week, the Mid and especially the Late and Very Late varieties may be given too much crop time. They may eventually outgrow their spacing, which will lead to very poor-quality plants. Planting over a 2 to 3-week period also evens out the workload during the very busy Spring season.



Premature Budding

Buds may be visible on cuttings you receive or may develop during the early stages of production. In general, this is not an unusual or serious problem and plants will usually develop normally. Small buds, as shown in the photo, are the Garden Mum's way of pinching itself. Larger premature buds are a sign of stress and can usually be minimized by adequate fertilizer levels and not allowing plants to wilt. Applications of Florel will also help return plants to a vegetative state.

Summer Controlled-Flowering for 7-week Response Garden Mums (6 to 6.5-in./15 to 16-cm Pots)

Plant Rooted Cuttings*	Pinch**	Shade	Sale***
April 2, 2014	April 11, 2014	April 23, 2014	June 11, 2014
April 9, 2014	April 18, 2014	April 30, 2014	June 18, 2014
April 16, 2014	April 25, 2014	May 7, 2014	June 25, 2014
April 23, 2014	May 2, 2014	May 14, 2014	July 2, 2014
April 30, 2014	May 9, 2014	May 21, 2014	July 9, 2014
May 7, 2014	May 16, 2014	May 28, 2014	July 16, 2014
May 14, 2014	May 23, 2014	June 4, 2014	July 23, 2014
May 21, 2014	May 30, 2014	June 11, 2014	July 30, 2014
May 28, 2014	June 6, 2014	June 18, 2014	August 6, 2014
June 11, 2014	June 13, 2014	June 25, 2014	August 13, 2014
June 18, 2014	June 20, 2014	July 2, 2014	August 23, 2014
June 25, 2014	June 27, 2014	July 9, 2014	August 27, 2014
June 25, 2014	July 4, 2014	July 16, 2014	September 3, 2014

* For 4-in. (10-cm) pot/1 ppp programs, delay the plant and pinch date 1 week. For 8-in. (20-cm) pot/2 ppp programs, plant and pinch 1 to 2 weeks earlier.

** Pinch plants when established and have approximately 1 in. (2.5 cm) of new growth.

***6-week varieties will flower 1 week earlier; 8-week varieties will flower 1 week later.

Lighting the crop between planting date and shade date is recommended.

Controlled Flowering of Summer-Fall Garden Mums (Black Cloth Mums)

Growing Garden Mums using black cloth to shorten the daylength is not difficult. It enables the grower to flower Garden Mums over a longer season and to have the crop ready when desired. The detailed schedule (at left) is a guide to determine the number of short days required.

- Typical controlled Summer-Fall schedule for 6 to 8-in. (15 to 20-cm) containers:

- Plant rooted cuttings in mid-April.
- Pinch when ready, about 10 to 14 days after planting. Pinching is definitely recommended for controlled programs.
- When the plants are established, start shade 2 to 3 weeks after planting.
- Plants flower 6 to 8 weeks after shading depending on response group (indicated by Black cloth response number under the variety photos on pages 3 to 30).

- Black cloth or 4 to 6-mil black plastic can be used to provide an impermeable light barrier over the crop. The material is

pulled over the crop to provide 12 to 15 hours of darkness daily. To reduce heat build-up which can delay flowering, a 7 p.m. to 7 a.m. schedule is helpful. Some growers use supports and nylon wire slightly above the crop or simply lay the plastic right on the plants and hold it down along the edges with pipes, soil, or stones. This may not be that easy to manage during heavy rains or wind. A better structure can be made from 10-ft. (3-m) electrical conduit or PVC pipe at 8 to 10-ft. (2.4 to 3-m) spacing. These are bent and stuck into pipe driven into the ground. The material is then pulled over the frame at the end of the day.

- It is best to black cloth the crop until the buds are well-formed and show color. However, some growers cover their crop for 2 to 3 weeks and then place the plants under natural long days. Careful variety selection is necessary for this to work well.

- Select varieties carefully for any controlled flowering program. See suggested varieties throughout the catalog. As always, keep careful notes of the varieties that work best for your particular location. Planting over a 2 to 3-week period also evens out the workload during the very busy Spring season.

Spring-Flowering Programs

See the chart below for suggested Spring Garden Mum schedules, including Light & Shade recommendations. Variety suggestions are on page 33.

No Light/No Shade Program

Obviously this is a crop that you need not bother with shade or lights.

- Best results are realized with smaller containers such as packs to 3-in. (7-cm) pots with 1 cutting per pot.
- Crop time is in the 7-week range.
- Do not attempt to flower after May 1.
- A minimum night temperature of 60°F (16°C) is required for uniform growth and flowering.
- Typical No Light/No Shade schedule for 3-in. (7-cm) containers:
 - Plant rooted cuttings in mid-February.
 - Pinch when ready, 10 to 14 days after planting.
 - Plants flower 6 to 8 weeks after planting.

Light/Shade Program

Refer to the chart below for specific Light/Shade requirements.

- This program enables the grower to more accurately control the size and flowering time than with a No Light/No Shade program.
- Larger-sized plants may be produced.
- It is essential to maintain a minimum night temperature of 60°F (16°C).
- Typical Light/Shade Spring schedule for 4-in. (10-cm) containers:
 - Plant rooted cuttings in February.
 - Pinch when ready, 10 to 14 days after planting.
 - Light for 2 weeks after planting.
 - Plants flower in mid-April, 6 to 8 weeks after the start of short days, depending on the response group.
 - For crops flowering after May 1, shade or black cloth is required for controlled flowering response.
 - Artificial long days are achieved by lighting the crop from 10 p.m. to 2 a.m. each day for the number of days required. A string of 75 to 100-watt bulbs spaced 3 ft. (90 cm) apart and 3 to 4 ft. (90 cm to 1.2 m) above

the crop will provide adequate light for a 6 ft. (1.8 cm)-wide row of containers. Control the lights with a simple timer.

- Black cloth or 4 to 6-mil black plastic can be used to provide an impermeable light barrier over the crop. Use as indicated in Controlled Flowering of Summer-Fall Garden Mums on page 38.

Post-Harvest, Shipping & Consumer Enjoyment

It is best to sell Garden Mums right out of the field; however, Garden Mums may be stored for up to 2 weeks without greatly reducing quality. For best storage results:

- Always reduce the salt levels in the pot by irrigating with fresh water during the last 10 days to 2 weeks of the crop.
- Maintain a storage temperature of 35 to 40°F (2 to 4°C) in the cooler.
- Water the plants well prior to storage. Allowing the soil to dry out will greatly reduce quality. If watering is necessary in the cooler, be sure to keep the foliage and flowers dry.
- If storing on racks, lighting inside the cooler is recommended, at a suggested rate of 50 f.c. (500 Lux).

Pests & Diseases

An IPM (Integrated Pest Management) program is the best defense against the various insects and related pests that attack a mum crop. Constant monitoring of the crop will enable the grower to detect pests before they become a problem and take appropriate action to control them. Many diseases of mums have been overcome by culture-indexing programs being done by the propagator, but there are still a number of root, stem, foliar and flower diseases which the grower might face.

- The best control is to start with clean cuttings and growing media. Proper control of the environment, heat, moisture, ventilation, etc. will then be the best defense.
- There are many effective chemical and natural controls for the numerous insects and diseases that attack mums. Before using any pesticides, check with local agencies in your state to ensure they are registered for specific use. Always follow the labeled rates and application methods.

Light/Shade Spring-Flowering Program for 7-week Response Garden Mums (4 to 4.5-in./10 to 11-cm Pots)

Plant Rooted Cuttings*	Pinch**	Light From	Light To	Start Shade	Sale***
January 2, 2014	January 10, 2014	January 2, 2014	January 15, 2014	No	March 5, 2014
January 8, 2014	January 17, 2014	January 8, 2014	January 22, 2014	No	March 12, 2014
January 15, 2014	January 24, 2014	January 15, 2014	January 29, 2014	No	March 19, 2014
January 22, 2014	January 31, 2014	January 22, 2014	February 5, 2014	No	March 26, 2014
January 29, 2014	February 7, 2014	January 29, 2014	February 12, 2014	No	April 2, 2014
February 5, 2014	February 14, 2014	February 5, 2014	February 19, 2014	No	April 9, 2014
February 12, 2014	February 21, 2014	February 12, 2014	February 26, 2014	No	April 16, 2014
February 19, 2014	February 28, 2014	February 19, 2014	March 5, 2014	No	April 23, 2014
February 26, 2014	March 7, 2014	February 26, 2014	March 12, 2014	No	April 30, 2014
March 5, 2014	March 14, 2014	March 5, 2014	March 19, 2014	No	May 7, 2014
March 12, 2014	March 21, 2014	March 12, 2014	March 26, 2014	March 26, 2014	May 14, 2014
March 19, 2014	March 28, 2014	March 19, 2014	April 2, 2014	April 2, 2014	May 21, 2014
March 26, 2014	April 4, 2014	March 26, 2014	April 9, 2014	April 9, 2014	May 28, 2014
April 2, 2014	April 11, 2014	April 2, 2014	April 16, 2014	April 16, 2014	June 4, 2014
April 9, 2014	April 18, 2014	April 9, 2014	April 23, 2014	April 23, 2014	June 11, 2014
April 16, 2014	April 25, 2014	April 16, 2014	April 30, 2014	April 30, 2014	June 18, 2014
April 23, 2014	May 2, 2014	April 23, 2014	May 7, 2014	May 7, 2014	June 25, 2014
April 30, 2014	May 9, 2014	April 30, 2014	May 14, 2014	May 14, 2014	July 2, 2014

* 5 to 6.5-in. (13 to 16-cm) containers should be planted and pinched 1 week earlier for the desired flowering date.

** Pinch plants when established and have approximately 1 in. (2.5 cm) of new growth.

*** 6-week varieties will flower 1 week earlier; 8-week varieties will flower 1 week later.

Rooting Unrooted Cuttings

Upon Arrival

- Cuttings should be stuck as soon as possible after receiving them.
- If necessary to hold cuttings, open the boxes and check the cuttings.
- Unrooted cuttings can be stored at 34 to 40°F (1 to 4°C), being careful not to freeze.
- Do not hold cuttings for more than 2 to 3 days.

Recommended Facilities Needed to Use Unrooted Cuttings

- A separate environment where high humidity and temperatures can be maintained is critical.
- A mist system with a cycle that can be adjusted to maintain the cuttings in a turgid condition, reducing stress.
- A heating system that can maintain a 70 to 72°F (21 to 22°C) soil temperature.
- A lighting system to supply 10 f.c. (100 Lux) at plant level, in the middle of the night (10 a.m. to 2 p.m.), to keep the cuttings vegetative.

Media

- Use soilless media that is well-drained, affords good aeration and has good moisture retention.
- Maintain soil pH at 5.8 to 6.2 with a soil EC of less than 1.0 (mmhos/cm).

Sticking Cuttings

- Fill containers and moisten media before sticking cuttings.
- Ball unrooted mum cuttings have been treated with rooting hormone so no additional treatment is needed before sticking.
- Holes may be dibbled into the media or the cutting directly stuck into the media.
- Cuttings should be stuck approximately 1 to 1.5 in. (2.5 to 4 cm) into the media; it may be necessary to remove the lower leaf.
- Garden Mums are usually started in 50 to 100-trays. The larger size tray gives the grower more time in which to transplant, since the plant must not be allowed to become rootbound.

Rooting Hormone

No rooting hormone application is required for Ball Mum cuttings. This has already been done for the grower.



The rooting stations for Ball Garden Mums are selected for their ability to produce high-quality rooted liners – here’s an example. Every day counts with a Garden Mum crop, so look to Ball for a great start!

After Sticking

- Water in immediately. Place under mist; the cycle will depend on the light, temperature, humidity, degree of rooting, etc. The following is a guide.

Days 1 to 4	5 seconds mist every 10 to 15 minutes
Days 5 to 8	5 seconds mist every 15 to 20 minutes
Days 9 to 14	5 seconds mist every 25 to 30 minutes

- Use a minimum mist that will prevent wilting.
- Too much mist or for too long after the plant has initiated roots can result in stretched plants.
- Maintain 70 to 72°F (21 to 22°C) soil temperature.
- Maintain high light intensity. It may be necessary to provide some shade under severe heat conditions, but high intensity will produce a higher-quality rooted cutting.
- During rooting, fertilize every 5 to 6 days with a solution of 250 to 300 ppm nitrogen using a 20-10-20 or similar feed.
- B-Nine applied at 1,200 ppm on Day 7 will reduce stretch. An additional application at Day 14 may be needed.
- Night interruption (10 p.m. to 2 a.m.) is required in the rooting area.

Time of Year	Hours of Light (middle of the night)
October to March	4 hrs. per night
April to May & August to September	3 hrs. per night
June to July	2 hrs. per night

After the Cutting is Rooted

- At this point, the container can be placed in the growing-on environment or the plants can be transplanted into the finish containers.
- Any stressing of the plant at this time will reduce quality.
- Mist or syringe the plants as required to prevent wilting.
- Water in immediately after transplanting with fertilizer at 300 to 400 ppm.
- Continue night interruption or start short days as the schedule may require.
- Begin constant liquid feed program of 250 to 300 ppm with each irrigation.

More mum culture questions? Call our Technical Services team at 800 879-BALL.



Ball Mum cuttings are uniform and treated with rooting hormone for rapid take-off and uniform growth.



Ball Mums are packed neatly and uniformly.

Ball unrooted cuttings are well labeled and easy to handle.

Our unrooted cuttings are organized for your convenience.

Ball Mum Rooting Stations

Your Ball Seed sales rep works with these reliable, dedicated suppliers to provide you with the highest quality rooted mum cuttings.

D.S. Cole Growers

Loudon, New Hampshire

Genesis Plant Propagators

Langley, British Columbia

George Sant

Kleinburg, Ontario

Greenstreet Growers

Lothian, Maryland

Kube-Pak

Allentown, New Jersey

Timbuk II

Granville, Ohio

Van de Wetering Greenhouse

Jamesport, New York



This field of garden mum combination pots at LaRosa Greenhouses in Woodstown, NJ was planned and developed by Carmen LaRosa and Ball Seed sales rep Rich Scall.

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