

*Welcome To*  
**Second Annual**  
**Fall Chrysanthemum Show**

*Hosted by*

**Department of Plant Sciences**  
**College of Agriculture, Food Systems, and Natural Resources**  
**North Dakota State University**

*When*

**November 17-18 (Wednesday-Friday), 2004**  
**Open 9:00 a.m. to 6:00 p.m.**

*Where*

**Loftsgard Hall Atrium**  
**North Dakota State University**  
**Fargo, North Dakota**

*Co-Sponsors*

**NDSU Horticulture and Forestry Club**  
**Northern Plains Botanic Garden Society**

*Special thanks to*

**Yoder Brothers, Barberton, Ohio**  
**North Dakota Nursery and Greenhouse Association**  
**North Dakota State Horticultural Society**  
**Tessman Seed Company, Fargo**  
**Shotwell Floral Greenhouse, Fargo**  
**Ball Seed Company, West Chicago, Illinois**  
**Baker Nursery Gardens, Fargo**  
**JW Perry Company, Moorhead**  
**Bergen's Greenhouses, Detroit Lakes, MN**  
**Kroshus Landscaping Inc., Fargo**  
**S & S Landscaping Co., Fargo**  
**CJ & K Tree Farm, Oakes**  
**Hornbacher's Foods, Fargo**

## Show Schedule

Wednesday, November 17

8:00 a.m. Judging of Entries  
9:00 a.m. Opening Ceremony  
9:00a.m.-6:00 p.m. Show Open

Thursday, December 4

9:00 a.m.-6:00 p.m. Show Open

Friday, December 5

9:00 a.m. Awards Ceremony  
9:00 a.m.-6:00 p.m. Show Open  
6:00 p.m. Show Closes

## Chrysanthemum Flower Classes and Prizes

Inflorescence types: Disbud and spray

Flower types: Decorative, daisy, anemone, spoon, quilled, incurved, spider, and miniature

In each class, prizes will be given to 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> places.

One grand champion prize will be selected from all categories.

Special awards will be given by horticulture industry and organizations.

## Judges

Dale Herman, Plant Sciences Department, Chair  
Larry Fischer, Northern Plains Botanic Garden Society, Chair  
Jerri Dykshoorn, Baker Nursery Gardens  
Russell Emerson, Ball Seed Company  
Barbara Laschkewitsch, Plant Sciences Department  
Ron Smith, Plant Sciences Department  
Tom Steele, Shotwell Floral Greenhouses  
Chun Ho Pak, Visiting Scholar, Plant Sciences Department

## Show Committee

Chiwon Lee (chair), Lisa Brown, Larry Chaput, Lynn Dahleen, Brenda Deckard, Dale Herman, David Hopkins, Barbara Laschkewitsch, Theresa Sung Eun Lee, Deying Li, Andy Vick, Jeremy Brockparler,

## Student Participants

Students enrolled in PLSC 210-Horticulture Science and PLSC 211-Horticulture Science Lab grew the plants throughout the fall semester:

Megan Albers	Whitney Anderson	Ethan Rice	Mitchell Bieber	Daniel Bjornson
Cindy Bloom	Ross Bowden	Kerry Burns	John Christianson	Jerad Cook
Cheryl Duvall	Joshua Erbes	Thomas Fish	Timothy Fleegel	David Frith
Julianna Fuka	Sheldon Gerhardt	Austin Germolus	Katie Goltz	Amy Greening
Lisa Grinberg	Petra G-Johnson	Nick Hall	Kelcee Hanna	Leslie Hanson
Alyssa Hoffert	Elicia Hofmann	Nikolas Jackson	Cassandra Jonas	Andrew Keating
Heidi Kerbaugh	Jacob Knaack	Ingrid Kolb	Travis Kraft	Kody Kylo
Darin Lee	Rachel Lee	Dustin Masset	Jenny Mondry	Kevin Moore
Nathan Nelson	Kyle Ransom	Alexander Richard	Brent Rogness	Liza Ronholdt
Michael Rufsvold	Lisa Sanden	Adam Sando	Benjamin Scheeler	Amber Schenfisch
Amanda Schlecht	Matthew Schreier	Scott Stockdill	Bruce Sukut	Kayla Swanson
Katsuyuki Teraucht	Shana Ternes	Nick Thomalla	Corey Thorson	Olivia Tkach
Ashley Vangsness	Elizabeth Yost			

# Chrysanthemums

## Scientific Name

*Dendranthema grandiflorum* is the botanical name for the cultivated chrysanthemum. It was formerly known as *Chrysanthemum morifolium*.

## Origin

Chrysanthemums originated from China, where many different types have been grown for over 1400 years. Hybrid chrysanthemums have been grown in Korea and Japan for over 1200 years. Cultivation in Europe started in the 18th century.

## Botany

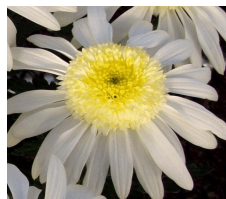
Chrysanthemum is a member of Asteraceae, the large aster family that includes the common sunflower, zinnia, and coneflowers. The modern day chrysanthemums are complex hybrids, involving *Dendranthema indicum* and *D. japonicum* as possible ancestors. The flower "head" is composed of disc florets in the center and ray florets on the outer edge.

## Classification by Flower Types

Depending on the shape and arrangement of ray as well as disc florets on the head, chrysanthemum flowers are classified into eight different classes: daisy, anemone, quilled, spoon, decorative, spider, incurved, reflex, and pompons. In this display, the reflex and pompon flower types are not included.



Daisy



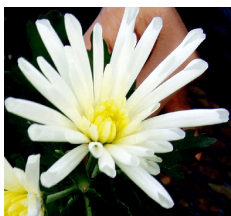
Anemone



Spoon



Decorative



Quilled



Spider



Incurved



Miniature

## Flower Induction

Chrysanthemum is typically a short-day (SD) plant, and flower bud formation takes place when the photoperiod is shorter than 12 hours. The time required from short-day treatment to flowering varies by cultivars (see cultivar list next page) from 7 to 10 weeks for potted plants. Garden mums, which require 6 to 8 weeks from the start of SD to blooming, usually initiate flower buds in response to naturally shortening days. Plants stay vegetative under long-day (>14 hours) conditions.

## Pinching and Disbudding

Shoot-tips are removed (pinched) two weeks after planting to encourage multiple branching. When lateral shoots are 1.5" long, a SD treatment should commence. The natural SD condition starts around September 20 in Fargo. Depending on cultivar and desired inflorescence, flower buds are removed when they reach a button size. For spray mums, the center bud is removed for uniform development and blooming of the numerous lateral buds. For disbud mums, all lateral buds are removed to allow the remaining center buds to develop into large blossoms.



Spray



Disbud

## Post-Bloom Plant Care

The blooming plants will retain colors for 3-4 weeks in well-lit areas under the normal home condition. Water plants as needed when a slight moisture stress symptom develops. Continuous exposure to water-logging inside the pot sleeve will encourage root rot. These plants are not winter-hardy like garden mums, although they will grow well outdoors, initiating flower buds in October. Unless the plants, after bud formation, are brought into the house, they will not survive the severe winter in this northern climate. So, you may discard them after blooms fade, and support the industry by buying new flowering mums next year. Good luck!

## 2004 Fall Chrysanthemum Show Cultivar List

Cultivar	Wk	Flower type	Color	Remarks
1. Apricot Blush	8	Daisy (5" diam)	Coral/salmon	Disbud or spray, medium vigor
2. Apricot Elmira	8	Decorative (very small)	Peach/2-tone	Spray, short
3. Billings	7	Daisy (5" diam)	White	Disbud, short
4. Brunswick	8	Daisy (4" diam)	White	Spray, tall
5. Casper	8	Decor/quilled (4.5" diam)	Yellow ctr/white edge	Disbud or spray, short
6. Cedar Falls	9	Daisy (3.5" diam)	Orange/bronze	Spray, medium vigor
7. Cocoa Beach	8	Daisy (4.5" diam)	Red	Disbud or spray, medium vigor
8. Coral Charm	8	Decorative	Bright Pink	Disbud or spray, medium vigor
9. Coral Graceland	8	Anemone	Pink	Disbud or spray, tall
10. Coral Splendor	9	Daisy (duplex)	Coral/salmon	Disbud, medium vigor
11. Covington	7	Decorative (4.5"diam)	Bright yellow	Disbud or spray, medium vigor
12. Dark Elmira	8	Decorative (1.5"diam)	Dk pink/lavender border	Spray, short
13. Elmira	8	Petite decorative (1.5")	Lt pink/dk pink edge	Spray , short
14. Fire Island	8	Daisy (4.5" diam)	Red, yell center	Disbud or spray, tall
15. Fontana	8	Spider (long)	Dark yellow	Disbud or spray, short
16. Fort Wayne	8	Daisy (2.5" diam)	Lavender	Spray, short
17. Gainesville	8	Decorative (4.5" diam)	White	Disbud or spray, medium vigor
18. Honey Graceland	8	Anemone, large (6" diam)	Orange	Disbud, tall growing, tall
19. Kodiak	8	Quilled Decorative	White/Ivory Tinge	Disbud or spray, medium vigor
20. Lafayette	8	Daisy (1.5" diam)	Bright yellow	Spray, medium
21. Leamington	7	Decorative (4" diam)	Perky peach	Disbud or spray, medium vigor
22. Manhattan	8	Decorative, spoon tip	Yellow	Disbud or spray, short
23. Mankato	8	Anemone (3" diam)	White/gr cushion	Disbud or spray, medium
24. Miramar	9	Daisy (large)	Yellow, green disk	Disbud or spray, medium vigor
25.. New York	8	Decorative (2.5" diam)	Pink	Spray, short
26. Niagara Falls	8	Daisy (2" diam)	Purple	Spray, short
27. Norwich	8	Decorative (4" diam)	Red	Disbud or spray, short
28. Orange Danville	8	Dahlia (4.5" diam)	Brilliant orange	Spray, medium vigor
29. Orange Davis	9	Daisy	Orange-bronze	Spray, medium vigor
30. Ottawa	7	Decorative (4" diam)	Glistening white	Disbud or spray, medium vigor
31. Pelee	8	Daisy (large)	Scarlet orange	Disbud, medium vigor
32. Plum charm	8	Decorative (4.5" diam)	Raspberry or fuchsia	Disbud or spray, medium vigor
33. Presidio	7	Decorative (4" diam)	Pink	Disbud or spray, tall
34. Providence	8	Decorative (3" diam)	Yellow	Disbud or spray, medium vigor
35. Raspberry Lompoc	8	Daisy (2.5" diam)	Red-coral	Spray, medium vigor
36. Red Auburn	8	Daisy (3"diam)	Red	Spray, medium vigor
37. Red Delano	8	Decorative (4.5" diam)	Lavender cntr/wt edge	Disbud, medium vigor
38. Reno	8	Daisy (2.5" diam)	Vivid orange	Spray, medium vigor
39. Seattle	8	Daisy (3.5" diam)	Red	Spray, medium vigor
40. Spring Delano	8	Decorative (large)	Lavender center/wt edge	Disbud, medium vigor
41. St. Louise	8	Daisy (3.5" diam)	Dk purple/white bicolor	Spray, medium vigor
42. Tahoe	7	Daisy	Pure White	Spray, tall
43. Tobago	8	Decorative (3.5" diam)	Dk yell/bt red	Spray, medium vigor
44. Trenton	8	Decorative (4.5"diam)	White/ivory	Disbud or spray, medium vigor
45. Veracruz	8	Spoon tip, daisy	Lt bronze to yell Ivory-white	Spray, tall growing
46. White Graceland	8	Anemone (6" diam)	White/ivory center	Disbud or spray, tall growing
47. Winnipeg	7	Decorative-quill	Dark lavender	Disbud or spray, medium vigor
48. Yellow Blush	8	Daisy (5" diam)	Yellow	Disbud or spray, medium vigor
49. Yellow Mankato	8	Anemone (3" diam)	Dk yell/golden cushion	Disbud or spray, medium vigor
50. Yellow Woodstock	8	Anemone (5" diam)	Lemon yellow	Disbud or spray, short

\*Grown as single-stem plants; all cultivars were provided by Yoder Brothers, Inc., Barberton, Ohio.

## Plans for 2005 Fall Chrysanthemum Show

The 3rd annual fall chrysanthemum show is expected to be held November 15-18, 2005. Entries from the general public, garden clubs, and horticulture organizations are encouraged. Those who are interested in growing cascading and other exotic mums as show entries can obtain rooted cuttings from Chiwon Lee (701-231-8062) in May and grow them outdoors. Outdoor grown mums can be pinched until mid-September, and brought into the greenhouse for flower initiation. Your participation in this community-wide event is encouraged.