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Evaluation of Garden Chrysanthemums for Alabama

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White Grandchild	**Festive Cushion**	**Boldface**	**Roll Call**
Scarleteer	**Tranquility**	**Raggedy Ann**	**Mango**
Golden Fantasy	**Pancho**	**Lovely Nook**	**Sunburst Cushion**

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Evaluation of Garden Chrysanthemums for Alabama

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THE GARDEN OR HARDY CHRYSANTHEMUM, aristocrat of the fall garden, is an old flower with numerous landscape uses. Today there are many new forms, colors, and varieties that have longer bloom life and varying growth habits.

Since chrysanthemum flowering is regulated by daylength, one purpose of this study was to determine date of flowering in central Alabama and to identify varieties that would give the maximum landscape display before a killing frost. Information was also needed on height and spread of plants at maturity for proper landscape use. Some 175 varieties were tested at Auburn University Agricultural Experiment Station during 1959-71.

CULTURE

Plants for this study were obtained annually from a commercial establishment specializing in rooted chrysanthemum cuttings.[2] These rooted cuttings were established in containers and later transplanted to the garden area. This permitted greater use of the garden beds for colorful rotation of seasonal flowering plants.

One rooted cutting was planted per 4-inch container in mid-June. These were grown in the greenhouse until transplanted to beds in the garden in late July.

Since chrysanthemums need a slightly acid (pH 6.0-6.5), well drained soil containing at least 30 per cent organic matter, a mixture of equal parts sandy loam soil, peat, and perlite was used for growing plants for the study. To adjust the pH and supply phosphorus, 7 pounds of dolomitic lime and 2 pounds of 20 per cent superphosphate were incorporated per cubic yard of potting mixture.

Adequate nutrient levels were maintained throughout the growing season to ensure quality plants. Liquid application of water soluble fertilizers was found to be the most satisfactory method of fertilizing the container-grown plants. The first application of fertilizer was made with the second watering after

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[1] Instructor and Professor, Department of Horticulture.

[2] Plants used in the study were donated by Fred C. Gloeckner Co., Inc., and Yoder Brothers, Inc.

cuttings were planted. A complete water soluble fertilizer, such as 20-20-20, was applied at 1 ounce to 5 gallons of water initially. Then every 10 to 14 days thereafter, the plants were fertilized at the rate of 1 ounce to 3 gallons of water. Care was also taken to keep the plants supplied with adequate moisture at all times. They were never allowed to dry to the point of wilting.

Growing compact plants with a maximum number of flowers requires periodic pinching. This consists of removing the growing tip (the top ¼ to ½ inch) of each shoot. The first pinch was made 10 to 14 days after planting. Thereafter, as the new shoots reached 2-3 inches in length their tips were removed. The last pinch was made no later than August 15 to assure proper flower initiation and development. A typical schedule for pinching is:

Plant – June 15
First pinch – June 25-29
Second pinch – July 16-20
Last pinch – August 6-10

Before planting the container-grown plants in the garden, beds were prepared by incorporating a 2- to 3-inch layer of peat into the upper 6 to 8 inches of soil. A soil test was made to determine the pH and fertility requirements. Dolomitic lime was added as required to adjust the pH. Generally a complete fertilizer, such as 8-8-8 or 12-6-6, was incorporated at the rate of 2-3 pounds per 100 square feet prior to planting. Additional applications of a complete fertilizer at the same rate, applied as a top-dressing and watered in, were made at 3- to 4-week intervals until the plants developed flower color. Mulching around the plants with a 2-inch layer of pine straw, rotted sawdust, or similar material was helpful in controlling weeds and conserving soil moisture.

Spacing depended largely on growth habit of the plant. Varieties that tended to grow upright and produce few branches when pinched were spaced 15 to 18 inches apart. These were usually taller growing varieties, which occasionally needed staking to prevent them from falling over. Short growing, more compact varieties that produced numerous branches when pinched required 18 to 24 inches between plants. Height and spread of varieties are given in the table.

VARIETY EVALUATION

Many varieties of chrysanthemums have been tested in the collection gardens of Auburn University Agricultural Experiment Station. Evaluation of these varieties was based on evenness of

flowering, retention of flower color, sturdiness and strength of stems, date of flowering for full effect before frost, and overall appearance of the plants in full flower. The most outstanding varieties tested for landscape and garden use are listed in the table, along with approximate bloom dates, plant size, flower color, and flower type. Less desirable varieties tested, which are still available from commercial sources, are listed in Appendix B.

MOST OUTSTANDING CHRYSANTHEMUM VARIETIES FOR LANDSCAPE AND GARDEN USE IN ALABAMA, TESTED 1959-71

Variety	Date first flower	Date full flower	Height, inches	Spread, inches	Flower color	Flower type
White						
Chris Columbus	Oct. 9	Oct. 16	17	16	white	decorative
Corsage Cushion	Sept. 29	Oct. 9	23	22	white	decorative
Diamond	Oct. 10	Oct. 20	18	20	white	pompon
Jessamine Williams	Oct. 10	Oct. 17	22	25	white	spoon-petalled-decorative
Larry	Sept. 28	Oct. 10	16	16	white	decorative
Minnwhite	Sept. 17	Oct. 3	18	22	white	decorative
Raggedy Ann	Oct. 11	Oct. 20	23	22	white	feathered decorative
Sleigh Ride	Sept. 29	Oct. 9	14	18	white	daisy
White Grandchild	Sept. 24	Oct. 6	19	22	white	pompon
Yellow						
Alert	Oct. 13	Oct. 26	19	20	lemon yellow	pompon
Chiquita	Oct. 5	Oct. 18	22	22	deep yellow	button
Early Gold	Sept. 21	Sept. 29	16	22	yellow	button
Gay Blade	Oct. 17	Oct. 27	23	32	yellow	small fuji
Golden Fantasy	Oct. 6	Oct. 16	17	15	yellow	feathered decorative
Golden Tranquility	Oct. 6	Oct. 15	22	22	yellow	decorative
Kings Ransom	Oct. 9	Oct. 16	22	15	yellow	pompon
Sunburst Cushion	Oct. 6	Oct. 15	18	20	yellow	spoon
Tranquility	Sept. 24	Oct. 7	27	24	yellow	decorative
Yellow Minnpink	Sept. 27	Oct. 5	13	20	yellow	decorative
Red-Bronze						
Commander Cushion	Oct. 14	Oct. 24	15	20	deep bronze	pompon
Dolli-Ette	Sept. 28	Oct. 16	17	18	golden bronze	spoon
Falcon	Oct. 4	Oct. 16	13	17	orange-bronze	anemone
Festive Cushion	Oct. 1	Oct. 12	17	22	red-bronze	decorative
Grand Dolli	Oct. 9	Oct. 16	18	24	orange-bronze	spoon
Lovely Nook	Oct. 14	Oct. 22	15	22	red-bronze	button pompon
Minnehaha	Oct. 4	Oct. 10	19	23	coral-bronze	decorative

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MOST OUTSTANDING CHRYSANTHEMUM VARIETIES FOR LANDSCAPE AND GARDEN USE IN ALABAMA, TESTED 1959-71

Variety	Date first flower	Date full flower	Height, inches	Spread, inches	Flower color	Flower type
Red-Bronze *continued*						
Newgo	Sept. 29	Oct. 9	18	21	golden-bronze	anemone
Pancho	Oct. 1	Oct. 9	14	18	orange-bronze	pompon
Roll Call	Oct. 6	Oct. 13	16	20	orange-bronze	decorative
Spunky	Oct. 3	Oct. 12	16	17	golden-bronze	button
Zonta	Sept. 23	Oct. 5	19	20	apricot-bronze	pompon
Red						
Lawrence Blaney	Sept. 29	Oct. 9	24	23	orange-red	decorative
Red Desert	Oct. 5	Oct. 18	22	25	maroon-red	decorative
Red Mischief	Oct. 17	Oct. 26	11	16	deep red	daisy
Ruby Mound	Sept. 10	Oct. 10	18	22	crimson red	pompon
Scarleteer	Oct. 8	Oct. 15	19	23	intense scarlet	decorative
Pink and Purple						
Ann Ladygo	Oct. 10	Oct. 16	17	24	light pink	anemone
Cameo	Sept. 25	Oct. 6	11	13	pastel pink	decorative
Corvair	Oct. 9	Oct. 20	21	19	light pink	button
#2 Fuchsia Fairy	Oct. 12	Oct. 26	18	20	deep pink	decorative
Joybringer	Oct. 11	Oct. 20	23	26	salmon pink	pompon
Major Cushion	Oct. 4	Oct. 17	14	22	light pink	decorative
Mango	Oct. 1	Oct. 12	18	17	deep lavender pink	anemone
Minnpink	Oct. 4	Oct. 16	10	17	pink	decorative
Mischief	Oct. 16	Oct. 26	15	25	deep pink with yellow	daisy
Raspberry Ice	Oct. 13	Oct. 27	30	26	raspberry pink	pompon
Rosey Nook	Sept. 24	Oct. 6	18	22	pink	button pompon
Tango	Sept. 28	Oct. 8	16	18	deep lavender pink	anemone
Purple Waters	Oct. 9	Oct. 16	15	20	deep purple	pompon
Tinker Bell	Sept. 23	Oct. 5	19	19	intense purple	pompon

APPENDIX A

Flower Types

Botanically, the chrysanthemum belongs to a large genus of annuals and perennials in the Compositae family – each head or false flower being formed from an aggregate of ray and disk flowers. The disk flowers make up the center of the head and are usually small and tubular in shape. The ray flowers surrounding the disk flowers are petal-like, are usually more colorful, and are generally called petals. There are many types of flowers.

The National Chrysanthemum Society has classified the flower types as follows:[1]

DESCRIPTION OF CHRYSANTHEMUM BLOOM TYPES

DIVISION A. (CLASSES 1-8)

Properties of the division: Ray florets flattened to concave or convex, visible portions never tubular.

Section I. (Classes 1-3)

Properties of the section: Disk prominent, circular in outline, composed of many disk florets.

Class 1. Single: Ray florets in a single row at right angles to the stem. Disk flat to slightly rounded and may be of contrasting color.

Class 2. Semi-double: Ray florets in more than one row at right angles to the stem but may curve downward at the tips. Disk as in Class 1.

Class 3. Anemone: Ray florets variable, from flattened, broad, and equal in length to reflexing, pointed at the tip, and unequal in length. Disk florets are numerous, tube-like, and elongated so as to form a prominent disk that may range from flat to hemispherical in form.

Section II. (Classes 4-8)

Properties of the section: Disk must not be apparent. Disk florets, if present in the center or scattered over the receptacle, must be concealed. Disk florets may be entirely absent.

Class 4. Pompon: Bloom globular, somewhat flat in young stage or in small button types. Ray florets incurved, broad, smooth, and firm with good substance.

Class 5. Incurve: Breadth and depth should be equal to produce a globular bloom. Ray florets narrow to broad, smooth, and incurve in a regular to an irregular manner without producing an open center.

Class 6. Reflexing incurve: Ray florets usually broad and smooth. Breadth and depth nearly equal to form a globular bloom, sometimes flattened, may be less compact than the incurve. All mature florets not completely incurving and not all completely reflexed. The lower florets reflexing sometimes to give a skirted effect.

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[1] National Chrysanthemum Society, Inc. U.S.A. Show and Judges' Handbook.

Class 7. Decorative: Ray florets from short and broad to narrow, long and pointed; they generally reflex although upper florets may tend to incurve. Blooms more flattened than globular.

Class 8. Reflex: Bloom globular with equal breadth and depth and a full center or somewhat flattened. Ray florets narrow to broad, gracefully overlapping in either a regular or irregular manner, and reflexed.

Division B. (Classes 9-11)

Properties of the division: Ray florets tubular; coiled or straight; thread-like to coarse; closed, spatulate, flattened, or hooked at the distal end.

Class 9. Spoon: Ray florets regular and tubular, usually straight, distal portion open, flattened, and spoon-like. Disk must be apparent with form as in Class 1 or 3.

Class 10. Quill: Ray florets tubular, straight, and not coiled; may be either closed to tip and pointed or open and spatulate. The bloom is fully double; disk must not be visible.

Class 11. Spider: Ray florets long and tubular, very fine to coarse, and may assume a wide variety of direction. Distal portion of the florets may be closed or open, and spatulate tips show definite coils or hooks. Disk must not be obvious. The following subclasses are suggested for large shows, particularly variety shows.

11a. Thread-like ray florets.

11b. Fine ray florets.

11c. Medium ray florets.

11d. Coarse tubed and flat ray florets.

Division C. (Classes 12-13)

Properties of the division: Ray florets flattened or tubular. Disk may or may not be obvious.

Class 12. Laciniated: Ray florets may be laciniated or feathered at tips. Bloom form may be any of classes 1 through 11.

Class 13. Brush or thistle-like: Ray florets are fine tubes grown almost parallel to the stem in a brush or thistle-like manner. Disk nearly concealed.

Many of these types are represented in garden chrysanthemums – singles, anemones, semi-double or daisy pompons, decoratives, and small headed spoons. These types may be found in small, intermediate, and large sizes. Generally, the large-flowered types are not grown outdoors because of late flowering and disease problems.

APPENDIX B

OTHER VARIETIES TESTED AND AVAILABLE FROM COMMERCIAL SOURCES 1959-71, AUBURN, ALABAMA

Variety	Flower color	Flower type
Accolade	coral pink	intermediate decorative
Aztec	orange red	decorative
Boldface	golden yellow	pompon
Bronze Giant	bronze	large decorative
Cecelia	soft purple	small decorative
Champion Cushion	bronze	decorative
Cheyenne	deep red	decorative
Charles Nye	deep yellow	button
Cochise	bronze	decorative
Comet	pink	anemone
Dan Foley	orange red	decorative
Dandy	reddish bronze	large semi-incurved
Ethyl Waters	deep yellow	intermediate pompon
Full Moon	white	large incurved
Golden Cushion	yellow	decorative
Gold Strike	bright yellow	fully double pompon
Golden Age	golden yellow	large decorative
Grace Bradshaw	white	decorative
Huntsman	red bronze	intermediate decorative
Jeweltone	salmon pink	small pompon
John Milbrath	yellow	medium semi-incurved
Lipstick	bright red	decorative
Marbletop	white	anemone
Martian	primrose yellow	decorative
Mikado	reddish bronze	cactus formed—decorative
Millionaire	light pink	decorative
Mojave Gold	golden bronze	large decorative
Mt. Hood	white	large pompon
Muted Sunshine	light yellow	anemone
Newton	deep yellow	cactus decorative
Ostosa	white	intermediate pompon
Peking	light yellow	decorative
Pinknificant	light pink	spoon
Pink Spoon Cushion	lavender pink	small spoon
Powder River	white	decorative
Princess	deep rose	decorative
Princess Ann	pink	decorative
Princess Kay	white	intermediate decorative
Pumpkin	orange bronze	semi-incurved
Purple Dusk	purple	decorative
Radiance	deep red	pompon
Rajah	red	intermediate daisy
Rambler	light bronze	anemone
Sarasota	lemon yellow	pompon
September Song	pink	semi-incurved
Shining Light	bright yellow	spoon
Sparking	rose pink	decorative
Touchdown	pink	semi-incurved
White Cushion	white	small decorative
White Masquerade	white	small pompon
Yellow Fuji Williams	clear yellow	fuji
Yellow Giant	yellow	decorative
Yellow Joan-Ette	lemon yellow	fuji

Evaluating chrysanthemums in this test garden at Auburn University represents a special phase of research by the Agricultural Experiment Station. Results of these studies, reported in this publication, should be useful to Alabamians who are interested in beautifying home landscapes or public areas.