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MINNESOTA GARDEN CHRYSANTHEMUMS AS SPRING POT PLANTS [1]

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Kofranek (5) suggested the use of hardy chrysanthemums as pot plants for sale by the florist for Mother's Day. He pointed out that hardy chrysanthemums serve as a dual-purpose pot plant, because they can be cut back after spring blooming and planted in the garden where they will bloom again in the fall. Additional work has been conducted at Ohio State University (1), (2), (3) and by Benken (4), Seeley (6), (7) and Skou (8) to determine the best varieties and cultural methods for producing pot plants of garden chrysanthemums for spring sales. Seeley (7) reported that he obtained the best results by growing the plants at a 60°F. night temperature, without the use of lights or black cloth.

Only early blooming chrysanthemums provide a satisfactory flower display in Minnesota gardens, as the average date of killing frost is earlier than in most sections of the country. Since work conducted in other states has usually been done with "late" blooming varieties of chrysanthemums, the primary purpose of this study was to determine which University of Minnesota garden chrysanthemum varieties would be best suited for spring pot plant purposes.

Treatment

Rooted cuttings were planted in three-inch pots and pinched on March 19, 1956. The plants were grown at a night temperature of 60°F. and no lights or black cloth were used. An equal group of plants was grown at 50°F. with all other factors similar. Pot to pot spacing was used for the first month, and the pots were then spaced three inches apart in both directions for the remainder of the forcing period. The plants were fertilized five times with an 8-8-10 soluble fertilizer at the rate of two tablespoons per gallon of water. Cultural procedure was kept as simple as possible in order to keep production costs at a minimum.

[1] Paper No. 937 of the Miscellaneous Journal Series of the Minnesota Agricultural Experiment Station.)

[2] Research Assistant and Assistant Professor, respectively.

All plants were cut back after flowering and planted in the field on June 21, to determine whether they would do as well as young plants placed in the field.

The experiment was replicated with 12 plants of each variety per treatment.

Varieties

Eight University of Minnesota named varieties and nine unnamed varieties were used. The unnamed varieties are being considered for naming in the future, and were included for the purpose of determining their adaptability to spring pot plant culture. The cuttings were taken from unlighted stock plants. Plants of the varieties Allegro, Chris Columbus, Joybringer, Mrs. DuPont, Spellbound, W. P. Snyder and Yellow Chris Columbus, which have been recommended by Benken (4), Kofranek (5) and/or Seeley (6), were used as check plants. Rooted cuttings of these plants were obtained through the courtesy of Yoder Brothers, Barberton, Ohio, who grow their stock plants under lights.

Results

Some plants of all of the named University of Minnesota varieties grown at 60°F. were in bloom on Mother's Day, May 13, 1956. In some instances, more of the plants of a variety bloomed after Mother'sDay, however. The only control variety in bloom on May 13 was Chris Columbus, but more of the plants of this variety bloomed after Mother's Day. Four control varieties, Yellow Chris Columbus, Chris Columbus, Mrs. DuPont and W. P. Snyder had begun to bloom by May 19, and on May 25, two weeks after Mother's Day, all of the control varieties had begun to bloom. Further data are presented in Table 1. (See page 3.)

Plants grown at a 50°F. night temperature were unsatisfactory.

All plants which were planted in the field grew and flowered normally. The blooming dates are shown in Table 2.

The results with unnamed varieties are not reported in this paper.

Table 2 - Blooming dates of garden chrysanthemum plants which were cut back and planted in the field following blooming in three-inch pots in the greenhouse in the spring.

Variety	Start of bloom	Comments
Dr. Longley	Aug. 27	Early to bloom
Glacier	Sept. 6	Uniform blooming habit
Harvest Bronze	Aug. 27	Large flowers
Minnbronze	Sept. 13	Small flowers, low plant
Minnpink	Sept. 20	Extremely floriferous
Purple Star	Aug. 27	Early to bloom, small flowers
Wanda	Aug. 27	Early to bloom
Wenonah	Sept. 13	Poor spray formation
*Allegro	Oct. 12	Few flowers
*Chris Columbus	Sept. 13	Heavy flowering, open center in flower
*Joybringer	Oct. 3	Good spray formation
*Mrs. DuPont	Oct. 12	Few flowers
*Spellbound	Sept. 23	Heavy flowering, good spray formation
*W. P. Snyder	Sept. 27	Large flowers
*Yellow Chris Columbus	Sept. 13	Heavy flowering, large, open center flower

*Check variety

Table 1 - Adaptability of garden chrysanthemums for spring flowering in three-inch pots

Variety	Flower color	No. flowers per plant	Flower size in inches	Plant height in inches	*Average blooming date	Comments	Rating
Dr. Longley	rose-pink	7.75	2.12	9.58	May 1	Weak stems, subject to mildew	Poor
Glacier	white	5.45	2.19	9.95	May 25	Good color and form	Excellent
Harvest Bronze	bronze	5.08	2.57	13.62	June 2	Good color and spray formation	Excellent
Minnbronze	vivid-bronze	8.66	1.81	8.29	June 2	Plants too compact	Fair
Minnpink	pink	5.75	1.78	10.92	After June 14	Half the plants remained vegetative, small	Fair
Purple Star	purple	18.92	1.73	13.25	May 12	Flower color fades rapidly; small flowers	Poor
Wanda	raspberry-rose	11.33	2.41	12.75	May 19	Good spray formation	Good
Wenonah	lavender	13.17	1.86	15.37	May 12	Poor spray formation	Fair
**Allegro	shrimp-pink	0.66	2.56	14.75	After June 14	Large flowers; poor spray formation; very late	Poor
**Chris Columbus	white	6.75	2.33	10.87	May 19	Strong stems; open centers; good spray formation	Excellent
**Joybringer	lavender-rose	2.83	2.04	12.96	June 2	Good spray formation	Good
**Mrs. DuPont	coral-buff	4.00	2.71	14.25	May 25	Flowers short-lived	Fair
**Spellbound	lavender	7.58	2.45	16.50	May 25	Too tall; large, attractive flowers	Fair
**W. P. Snyder	apricot-orange	5.83	2.03	11.54	June 2	Flowers long-lived	Good
**Yellow Chris Columbus	yellow	5.83	2.03	12.58	May 19	Strong stems, excellent spray formation; open centers	Excellent

*Average blooming date was the time when at least half of the plants were in bloom.
**Check variety.

It may be noted in Table 2 that all University of Minnesota varieties were blooming by September 20, and that all but one were in bloom by September 13. Two check varieties, Chris Columbus and Yellow Chris Columbus, began blooming by September 13, and two varieties, Allegro and Mrs. DuPont, only began to bloom on October 12. The average date of killing frost in the Twin Cities is October 13. In 1956, the chrysanthemums were killed by frost on November 7, considerably later than usual.

Discussion and Conclusion

The results of this study indicated that several University of Minnesota garden chrysanthemum varieties are suitable for spring flowering in the greenhouse in three-inch pots. Although most of the check varieties bloom later than do the Minnesota varieties, it is possible that some of them may bloom early enough for Mother's Day if they are started one to two weeks earlier.

The Minnesota varieties did not bloom as uniformly as may be desired, if the plants are destined for sale for a holiday. The plants might have been more uniform in blooming if the cuttings had been taken from lighted stock plants or if black cloth had been used. It is also possible that cuttings taken from lighted stock plants should be planted a week to ten days earlier to be in bloom for Mother's Day. If the plants are desired for sale over a period of weeks rather than on one set holiday, however, it would be preferable to have the plants come into bloom less uniformly.

A total of 288 plants were grown at the 60°F. night temperature. These plants required 25½ square feet of bench space for the first month and 72 square feet for the remainder of the study. If a total of ten weeks is required to produce the plants and the estimated production cost is $2.00 per square foot of bench area per year, the cost of production for 288 three-inch pot plants would be $24.73 or approximately nine cents per plant.

This figure is probably low as it does not consider the cost of producing the cuttings, but is still illustrates the possibility of producing an inexpensive pot plant with a dual selling point, for cash and carry sales. The fall of 1956 was favorable to garden chrysanthemums, indicating that sales in the spring of 1957 should be good.

The production of potted chrysanthemums as described in this study is an exact operation. Use a good soil mix and do not neglect cultural factors such as watering, fertilizing and pest and disease control.

The better varieties of outdoor chrysanthemums are not reliably hardy in all locations every winter. Survival of the plants varies with the type of winter and the planting location. For this reason it would seem preferable to call the plants garden chrysanthemums rather than hardy chrysanthemums.

Summary

1. A study was conducted to determine the feasibility of growing University of Minnesota garden chrysanthemums as blooming three-inch pot plants in the greenhouse for Mother's Day sale.

2. The plants were pinched and potted on March 19 and grown at a 60°F. night temperature without lights or black cloth.

3. University of Minnesota varieties Glacier, Harvest Bronze and Wanda and check varieties Chris Columbus and Yellow Chris Columbus are recommended for this purpose.

4. All plants grew and bloomed well when planted in the field.

References

1. _____, Hardy mums in flower for spring sales. Ohio Florists' Assoc. Bul. 256:8. January, 1951.

2. _____, A simplified system of producing hardy mums for spring sales. Ohio Florists' Assoc. Bul. 292:5. January, 1954.

3. _____, Attention - Growers of small plants for combination or mixed pots. Ohio Florists' Assoc. Bul. 292:6. January, 1954.

4. Benken, I., Hardy mum plants as spring pot plants. Ohio Florists' Assoc. Bul. 280:2-3. January, 1953.

5. Kofranek, A. M., Hardy mum pot plants for Mother's Day. New York State Flower Growers' Bul. 53:6-7. January, 1950.

6. Seeley, J. G., Potted garden chrysanthemums for spring sales. Pa. Flower Growers' Bul. 23:1-3. November, 1952.

7. Seeley, J. G., No lights or black cloth for garden mums. Pa. Flower Growers' Bul. 58:1. November, 1955.

8. Skou, W. Hardy mums for spring flowering pot plants. Ohio Florists' Assoc. Bul. 264:2-3. September, 1951.