

Production

Greenhouse Testing of Garden Chrysanthemum Hybrids From Seed*

L.C. Stephens, J. Zagorski, R.E. Widmer,
P.D. Ascher, M.C. Stuart
Hort. Science & Landscape Architecture
University of Minnesota, St. Paul, Minn.

Introduction

Garden chrysanthemums are currently produced from cuttings and sold in the spring as bedding plants for autumn flowering. The University of Minnesota has bred and selected, and named clonal cultivars for their suitability as blooming spring pot plants as well as for fall display. Costs of maintaining stock plants and producing disease-free cuttings contribute to the relatively high price of garden mums as bedding plants.

Production of garden mums from seed (seed mums), if practical, might lower the cost of each propagule and minimize the likelihood of starting with diseased material. Few seed mum cultivars exist however, and those available are very late flowering in Minnesota. Because Minnesota clonal introductions were selected for earliness (as well as other qualities), we decided to compare time of bloom of some of our experimental hybrid seed lines with a commercial seed-mum hybrid.

No detailed cultural guidelines are currently available for the production of seed-mum cultivars as spring bedding plants. Therefore, our objectives were to: 1) investigate the feasibility of producing F1 hybrid garden mums from seed as bedding plants and 2) evaluate experimental F1 hybrids for uniformity and earliness of bloom in the fall.

Materials and Methods

Seeds of 14 UM F1 hybrid lines and one commercial hybrid control, 'Autumn Glory', were sown in mid-January 17, 1980 in a nutrient-enriched peat-vermiculite mixture and fertilized appropriately. 'Autumn Glory' was used as a control because it was the earliest and most uniform seed-mum cultivar available at the time of the study. Seedlings were transplanted into 3" diameter pots on March 3 using a medium of 3:1 moss peat:loam soil. A slow release fertilizer (19-6-12) was incorporated at the rate of one 4" potful per 3 bushels of soil. After potting, each F1 progeny was split into two groups, plants were randomized to minimize microclimate effects. One group was black cloth shaded to receive 8 hour short days starting March 17. The other group was

left under natural daylength. Data taken included the number of days to first flower for each plant plus the number of flowers and plant height on May 11 (Mothers' Day).

Results and Discussion

Significant differences in bloom time, flower number and plant height were noted among F1 progenies under both natural and short photoperiods. Plants grown under short photoperiods averaged four open flowers per plant and 6" height. Plants grown under natural photoperiods had an average of two fewer flowers and were 1" taller.

One group of progenies (A) flowered equally well under short and natural photoperiods; a second group (B) flowered better under short photoperiods and a third group (C) failed to flower sufficiently under either photoperiod (Table 1). Incidentally, the progenies in group A may not be photoperiod neutral, as they might have been induced to flower under the natural Minnesota short days prior to March 17. These group A hybrids were early enough to be produced as flowering bedding plants for Mothers' Day. However, all were still con-

sidered too variable in bloom time and plant height to be commercially acceptable.

No plants of the commercial hybrid 'Autumn Glory' bloomed by May 11, but many were budded and 18% were in bloom by June 2, under short days. Therefore, it may be possible to produce this cultivar as a bedding plant if seeds are sown earlier. This, of course, would mean a longer production time and consequent higher cost.

Limited evaluation indicated that 3" pots of flowering garden mums survived field transplanting with little or no loss and that fall flowering was unimpaired by the previous spring flowering.

Since several of the F1 hybrids (79-L324, 79-L340 and 80-13) had a common early-flowering parent, it may well be possible to select for greater uniformity of earliness in seed-propagated garden mums. Because of the variability residual in bloom time and plant height still present in Minnesota seedlines, more breeding is needed before we can consider this crop commercially acceptable for wide scale production.

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Table 1: Percentage of plants from 15 F1 hybrid progenies in flower by May 11, 1980 (Mothers' Day) from a January 17, 1980 sowing.

Hybrid Line	Progeny ID Number	% Flowering		Group
		Short	Natural	
I	79-L234	94	83	A
II	79-L340	94	89	A
III	79-L438	94	88	A
IV	80-13	76	82	A
V	80-L15	60	60	A
VI	79-L439	82	24	B
VII	79-L446	73	27	B
VIII	79-L443	71	40	B
IX	80-161	71	53	B
X	79-L306	60	21	B
XI	80-L2	45	27	B
XII	79-L341	19	6	C
XIII	80-138	9	0	C
XIV	80-131	0	8	C
XV	Autumn Glory	0	0	C