



Colorado Flower Growers Association, Inc.

IN COOPERATION WITH COLORADO STATE UNIVERSITY

Doris Fleischer, Executive Secretary

Bulletin 137

655 Broadway, Denver 3, Colorado

August 1961

Effects of

Planting Date, Type of Plant, and Pinching on Yield and Grade of Carnations

by

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Two benches of Sim Carnations were planted on May 15, two on June 15, and two on July 15. One bench on each date was planted with rooted cuttings and one with transplants which had been grown 6 weeks in peat pots. The plants in one half of each bench were grown with a single pinch and the other half given a pinch and a half. In other words, half the breaks from the first pinch were pinched again.

Plants were cooled by evaporative pads and fans. Day temperature was 65°F in the fall, 60° from November 15 to March 15, and 65° until the cooling system would no longer hold this temperature on warm days. Night temperature during the heating season was 50-52°F.

Effects of planting date

The yield and grade of flowers for the 52 weeks following planting date are shown in Table 1. Type of plants, pinching methods, and thinning treatments are lumped together in these totals so that only differences due to planting date are shown.

Higher total yield and higher yields in the standard and short grades from the July planting were due to the high yield

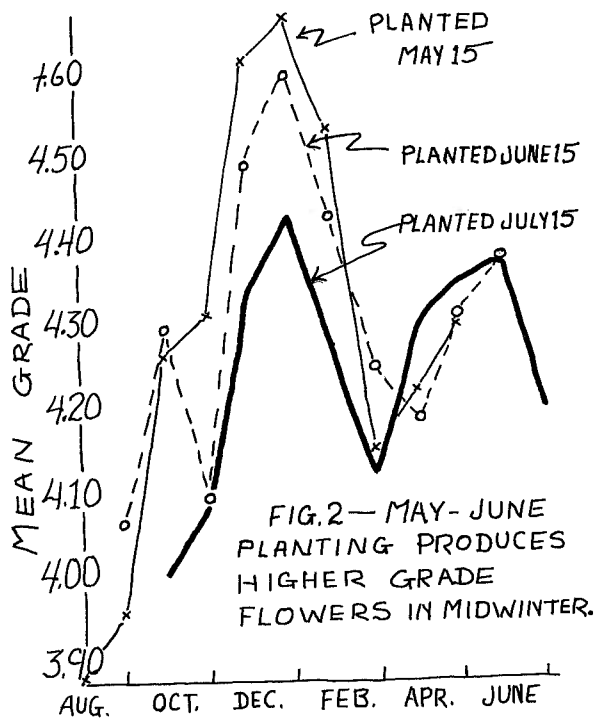
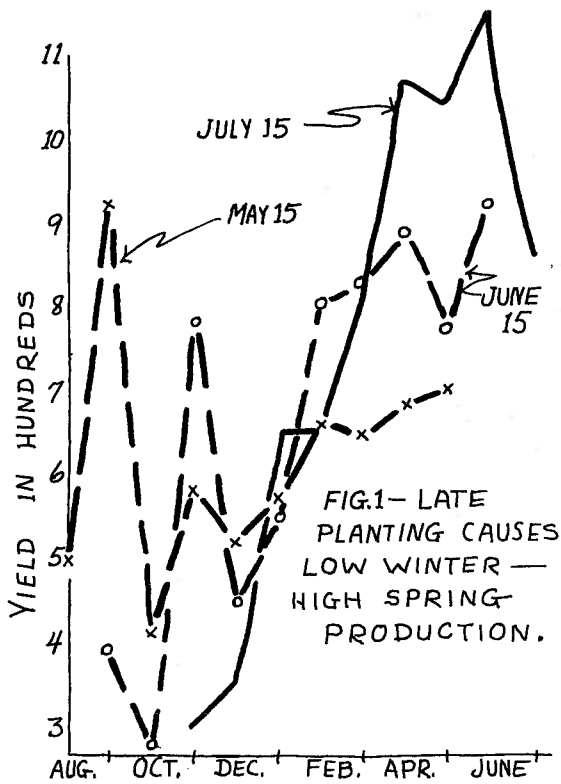
Table 1. One year yield and grade of Sim carnations following three planting dates.

Date planted	Grade				Mean grade	Total
	Design	Short	Standard	Fancy		
May 15	468	481	1957	3005	4.27	5911
June 15	565	386	1885	3345	4.30	6181
July 15	431	596	2269	3318	4.28	6614

Mean grade is calculated by the following numerical assignments to the grades: Design = 2, Short = 3, Standard = 4, and Fancy = 5.

from these plants at the end of the cropping year. There is an increase in yield with later planting dates and although all plantings received 52 weeks of solar energy, the later plants were started the more solar energy they received at the end of the cropping year, when the larger plants could use this high light more effectively.

The later the planting date the higher was the yield the last half of the cropping year (Fig. 1). The May planting produced significantly more flowers during the fall and early winter and significantly less flowers during the spring months. Very high yields came from the July planting for April, May and June. The June planting peaked in November and returned with high yields from February to June.



While the yearly average grade of flowers from the 3 plantings was the same (Table 1), grade during December, January, and February was highest for the May planting and lowest for the July planting (Fig. 2). All three plantings hit a low mean grade in March or April, improving somewhat in late spring. This low in mean grade occurred as yield was increasing toward the second crop and is primarily a reaction to the limited light of winter.

Planting date influenced the grade of winter flowers significantly and shows some promise as a means of avoiding low grade flowers in March.

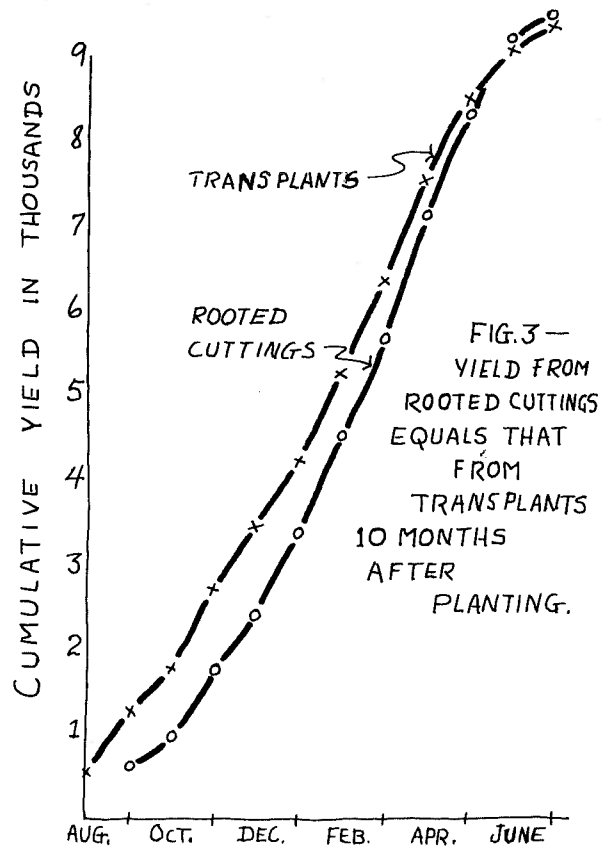
Transplants VS. Rooted Cuttings

Three greenhouse benches were planted with rooted cuttings while three others were planted with transplants which had been grown 6 weeks previously in peat pots. A total of 293 square feet was planted to each type of plants in three equal steps on May 15, June 15, and July 15. Yield and grade records were kept 52 weeks following the planting dates (Table 2).

Table 2. Yield and grade of Sim carnations for 52 weeks following planting.

	Grade				Total	
	Design	Short	Standard	Fancy		Mean yield
Rooted cuttings	593	767	3149	4825	4.31	9334
Transplants	871	696	2962	4843	4.26	9372

Yield and average grade were approximately the same for both types of plants. For cropping periods less than one year Fig. 3 shows a gradually decreasing difference in yield. Transplants flowered about one month earlier and remained ahead of rooted cuttings in yield for the first ten months of each planting.



To estimate effects these two types of plants may have on winter grade of flowers, January and March yields are included in Table 3. The average grade of flowers was highest in January and lowest in March.

Table 3. Effects of type of planting stock on January and March yield and grade of Sim carnations.

	Grade				Mean yield	Total
	Design	Short	Standard	Fancy		
<u>January</u>						
Rooted cuttings	66	29	200	688	4.54	983
Transplants	46	16	145	564	4.59	771
<u>March</u>						
Rooted cuttings	51	187	361	537	4.22	1136
Transplants	108	168	342	516	4.12	1134

Yield was higher for rooted cuttings in January but the same as for transplants in March. Average grade was essentially the same for both types of plants in January but significantly reduced for transplants in March. The yearly average grade of flowers was approximately the same for both types of plants (Table 2).

While transplants start flowering earlier, rooted cuttings branch more freely thereby producing just as many flowers in one year of time. Although the yearly average grade of flowers from the two kinds of planting stock was about equal, rooted cuttings produced better average grade at the low point in March.

Effects of pinching

One half of the plants in this experiment were grown with a single pinch and the other half received one and a half pinches. The additional pinching delayed start of flowering 2 weeks on the May 15 planting, 3 weeks on the June 15 planting, and 4 weeks on the July 15 planting. The 52-week yield and grade of flowers as affected by pinching is shown in Table 4. Each pinching treatment occupied 293 square feet of bench area.

Table 4. Yield and grade of Sim carnations for 52 weeks following planting date.

	Grade				Mean yield	Total
	Design	Short	Standard	Fancy		
<u>Single pinch</u>						
	747	669	3094	4797	4.28	9307
<u>1½ pinches</u>						
	717	794	3017	4871	4.28	9399

Yield and yield within each grade were essentially the same for both pinching treatments. Mean grade for the entire year was also the same. As has been the case in other facets of this investigation, yearly

averages are misleading. Since highest monthly grade occurred in January and lowest in March, these records are presented in Table 5. Yield was higher for the 1½ pinch treatment in both months. Mean grade was the same for the two treatments in January, but significantly lower in March for the plants receiving 1½ pinches.

Table 5. January and March yields of Sim carnations from plants grown with one, and one and a half pinches.

	Grade				Mean yield	Total
	Design	Short	Standard	Fancy		
<u>January</u>						
<u>Single pinch</u>						
	64	18	164	592	4.53	838
<u>1½ pinches</u>						
	58	27	183	660	4.56	928
<u>March</u>						
<u>Single pinch</u>						
	70	137	287	514	4.24	1008
<u>1½ pinches</u>						
	89	218	416	529	4.11	1252

Interactions

The effects of planting time, pinching, and type of plant on late winter grade of carnations are independent and additive. Each factor has a small influence on March grade of flowers. Rooted cuttings benched June 15 and given one pinch had a mean grade at the low point of 4.48, while at the other end of the scale transplants benched July 15 and given a pinch and a half produced flowers in March with a mean grade of 3.96. Table 6 shows the March yields and grades from the three plantings of rooted cuttings which received one pinch and the three plantings of transplants which had a pinch and a half.

Table 6. Grade of flowers in March produced on three plantings of rooted cuttings receiving a single pinch compared to those from three plantings of transplants receiving a pinch and a half.

	Grade				Mean yield	Total	Planting date
	Design	Short	Standard	Fancy			
<u>Single pinch-rooted cuttings</u>							
	6	22	42	131	4.48	201	6/15
	1	31	56	85	4.30	173	5/15
	11	13	36	41	4.06	101	7/15
Total	18	66	134	257	4.33	475	
<u>Transplants</u>							
<u>1½ pinches</u>	8	26	61	79	4.21	174	6/15
	13	18	50	57	4.09	138	5/15
	35	53	78	113	3.96	279	7/15
Total	56	97	189	249	4.08	591	

Rooted cuttings grown with a pinch and a half and transplants receiving a single pinch produced flower grades in March intermediate between the two extremes shown. The former averaged 4.14 while the latter averaged 4.17.

Summary

Plantings of carnations in May or June produced higher grade flowers the following winter. Winter grade was significantly reduced on plantings of July 15.

Yield from rooted cuttings was equal to that from transplants after 10 months from planting date. The mean grade of flowers at the March low-point was higher for rooted cuttings.

Yield the first 52 weeks was approximately the same whether plants had a single pinch or 1½ pinches. Average grade at the low point was significantly higher for plants grown with a single pinch.


For maximum increase in late winter-early spring grade of flowers a program which includes May-June planting of rooted cuttings grown with a single pinch is indicated.

Considerable pink color has appeared in White Sim for several years. This problem is genetic as well as environmental. All Sim varieties carry a gene for flushing which normally does not show. With the right environment this color appears in white and the lighter colored varieties. Flushing seems to appear in Pink Sim mostly during winter, while in White Sim the problem is more of a summer one.

Temperature seems to be the major factor causing pink flushing in White Sim. Far more frosted flowers are cut near the evaporative pads. Day length is also a factor which contributes. The particular flushing in White Sim comes mostly from April to October, or in longer days. Flushing in Pink Sim seems to be accented by cold temperature and short days.

Suggestions---plant White Sim away from evaporative pads, or sort out flushed flowers and dye them pink.

Your editor,



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