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Timing Your Carnation Crop

Arthur Bing
Department of Floriculture
Cornell Ornamentals Research Laboratory
Farmingdale, Long Island

How can you produce carnation flowers in December and January? When should the grower plant and pinch plants for a fall crop to come in under plastic or sash before the winter crop in the greenhouse? If flowers are cut in February, when does the return crop come in flower? The answers to these and other questions of interest to the carnation grower can be found by studying the timing data presented in this article.

Very valuable research data on carnation timing has been published by W. D. Holley and associates at Colorado (2, 3, 5), and by Kenard Nelson and D. C. Kiplinger at Ohio (4). During the same period several timing experiments were being carried out on Long Island. The object of these studies was to correlate our data with that from other areas, to help the grower on Long Island better plan his carnation crop.

Return Crops

The first of a series of carnation timing studies at the greenhouse range of Oscar Maier was reported in this bulletin in 1953 (1). This series was on the time required for carnation side shoots to flower after the flower on the main stem had been cut. At the time of cutting the shoots were tagged with wired wooden labels showing the date the flower was cut, shoot length, position of shoot on stem and in addition during one year the position of the plant on the bench. As flowers were cut labels were removed and recorded. The work was carried out during the growing seasons of 1951-52, 1952-53, and 1953-54. The distribution of the combined return crops from each original flower cut from the Sim varieties for the three seasons are shown in Table 1. As can be seen from Table 1, the return from the September cut was spread from February to June. The return from the November cut flowered from early April to early June with a high peak of production in May. The return from the February crop is from late May to late June with a very sharp peak in mid June. Table 2 shows that there is variation from year to year on the time of flowering of the return crops. This was due largely to weather differences but it could also have been due to differences in vigor of plants because of size of rooted cuttings when planted or other cultural differences. The return from the September cut averaged 31.5 weeks while the return from the February cut averaged 16.5 weeks. This is due to increased light and temperature in the spring which hastens shoot development as compared to the reduced light during the short days of late fall and winter.

Table 1

Carnation Return Crops

Composite of Season 1951-52, 1952-53, 1953-54 for Sim varieties

Period Flowers Were Cut	Percents of Flowers Cut From Shoots Tagged in Month of					
	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.
Feb. 14-27	5.5	0.4				
Feb. 28-March 13	10.3	1.0	0.6	0.4		
March 14-27	9.5	7.0	0.6	0.0	0.4	
March 28-Apr. 10	12.7	16.8	4.0	1.5	0.4	0.4
April 11-24	21.5	21.0	14.4	7.0	0.4	0.4
April 25-May 8	16.7	17.5	27.1	17.1	2.6	0.0
May 9-22	14.3	14.7	32.4	33.7	24.2	1.3
May 23-June 5	4.8	14.0	12.4	27.0	37.5	20.0
June 6-19	3.2	6.6	6.8	12.2	27.9	62.9
June 20-July 3	1.6	1.0	1.7	1.2	6.6	15.0

Table 2

TIME FOR RETURN CROP TO FLOWER

Month of Original Cut	Average Weeks to Return Crop						
	Herc'les	Red Sim			White Sim		Sim. var.
	'51-'52	'51-'52	'52-'53	'53-'54	'51-'52	'52-53	Av.
Sept.	30.1	29.8	32.6	x	30.3	33.2	31.5
Oct.	29.0	26.6	29.5	26.1	28.4	31.5	28.4
Nov.	27.4	24.6	26.2	24.4	24.7	26.5	25.3
Dec.	24.2	21.8	25.7	21.0	21.8	23.5	22.8
Jan.	19.7	18.9	19.5	18.8	19.1	19.7	19.2
Feb.	16.6	16.3	16.3	17.1	15.5	17.0	16.5

Shoots that were longer flowered earlier. As seen in Table 3 the difference was greater during the more unfavorable period for development in the early winter. Red Sim shoots tagged in September 1951 took an average of 23 weeks to bloom for an 8 inch shoot while it took 30 weeks for a 4 inch shoot, a difference of 7 weeks. The side shoots are larger later in the season and 4 inch shoots on Sim varieties are not so common in February as in September. From a February tagging the 10 inch shoot took 15 weeks the 8 inch 16.4 weeks and the 4 inch shoot 19.0 weeks which is a difference of 2.6 weeks between 8 and 4 inch shoots.

Position of plants in the bench had no effect on the time required for shoots to flower. Relative position of shoots on the plants also did not have a pronounced effect on timing. Vigor of shoots appeared to be the determining factor but was hard to measure except by length

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Carnations

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Table 3
EFFECT OF SHOOT LENGTH ON RETURN CROP

Orig. Cut	Shoot length (in.)	Weeks to Flower: Red Sim '51-'52	Red Sim '52-'53	Red Sim '53-'54	White Sim '51-'52	White Sim '52-'53	Her'les shoot length (in.)	Her'les '51-'52
Sept.	8	23.0			27.0		3	24.4
	6	26.2	34.4		28.3	33.0	2	29.6
	4	30.0	31.0		31.0	33.3	1	34.4
Oct.	8	25.5		24.5	22.0		3	26.9
	6	25.6	28.8	27.8	26.8	30.6	2	29.0
	4	29.1	31.7	31.3	28.8	32.5	1	32.1
Nov.	8	21.9	24.0	23.4	21.8	23.0	3	26.0
	6	26.7	26.4	23.9	23.0	28.0	2	27.4
	4	28.5	29.3	25.4	27.3	28.5	1	29.2
Dec.	10	19.1	22.1	17.0	19.0	20.8	3	22.5
	8	21.5	22.8	17.8	21.2	22.1	2	24.5
	6	22.4	23.6	20.6	22.7	22.7	1	26.7
	4	24.5	26.7	22.9	25.0	26.0		
Jan.	10	15.0	18.6	17.0	17.0	18.5	3	18.7
	8	18.1	18.7	18.5	19.7	18.8	2	20.5
	6	19.2	20.0	18.7	20.0	21.6	1	22.0
	4		21.9	20.4	20.5			
Feb.	10	15.0	15.2	16.3	14.8	16.0	1	17.1
	8	16.4	16.3	17.3	16.4	16.9	2	17.3
	6	16.5	16.7	18.5	16.6	17.3	3	18.5
	4	19.0		16.0				

of side shoots at time the flower was cut.

Cutting flowers in September to October gives a return crop during March to May. Only longer side shoots need be left on the plants in December and January and no shoots need be left from the February cut unless many flowers are desired during June.

Single Pinch Plants

Studies were made on the flowering of direct benched White Sim carnations. For 12 consecutive months starting in January 1958 rooted cuttings were planted in steam sterilized greenhouse soil containing added peat moss, limestone and superphosphate. A regular liquid fertilization program was followed. This was supplemented with an occasional dry fertilization. All plants were pinched as soon as planted on the 10th of each month or as soon as possible after planting. The plants were grown for 18 months and at a night temperature of 50-52° when outside temperatures permitted. The greenhouse was cooled by pad and fan during the summer of 1958 but not in 1959 because of other experiments in the greenhouse. Cut flower yields were recorded for each planting.

Table 4 shows the per cent distribution of the flowers cut from each of the 12 plantings over the 18 month period. The January planting came in heavy for June (5 months). It was very light during the following November to February period. The April planting came in heavy during July (3 months) and was also in light production during the next winter. The July planting was heavy in October (3 months) and November but poor in December to March. This would be good for a fall crop under plastic with a little heat. An earlier planting with a pinch during June to mid July may give more flowers. The August planting and pinch came in fairly good during the winter months. The September planting did not come in heavy until April. A continuous pinch during July to early September should give a good winter production.

The winter crops from the August to December plantings were much better in 1959-60 than they were in 1958-59, from the January to July plantings. Could the summer air conditioning in 1958 reduce winter flowering in 1958-59?

Table 4
Flowering of carnation var. White Sim from rooted cuttings planted and pinched January 1958-December 1958

Flowers Cut During Month of		Percentage of Flowers Cut From Planting and Pinch Made: Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1958	June	26.1	17.6	4.2									
	July	9.5	11.1	19.4	17.2	0.4	0.9						
	August	10.0	6.9	3.8	5.0	20.1	8.5						
	September	5.7	6.1	8.0	1.8	4.9	10.7	0.9					
	October	4.8	4.5	3.3	4.7	1.5	4.7	7.1	0.4				
	November	1.7	4.1	2.8	3.8	0.8	2.3	9.1	1.7				
	December	1.3	1.4	1.4	2.0	1.2	1.3	2.3	4.0				
1959	January	1.7	2.6	2.0	1.8	1.9	1.6	2.3	4.9	0.2			
	February	1.5	2.5	1.9	3.5	1.5	2.8	0.7	4.9	0.9			
	March	4.8	4.7	3.0	2.6	3.2	2.6	2.4	3.6	3.5	0.2		
	April	4.7	3.4	5.0	4.8	7.1	3.8	4.2	2.5	10.7	4.0		
	May	12.0	13.1	11.6	12.1	14.1	11.3	14.1	13.5	12.4	18.7	5.9	2.5
	June	16.2	14.0	21.9	21.3	16.5	20.3	19.1	20.1	27.3	22.8	30.7	30.7
	July		8.1	10.9	11.0	7.4	10.3	10.8	11.0	10.1	15.6	11.6	15.1
	August			6.4	5.8	9.4	7.8	11.3	8.2	9.9	8.5	14.2	14.7
	September				3.1	6.2	6.0	6.5	8.5	2.9	2.5	5.3	6.1
	October					3.8	3.2	3.7	4.2	4.3	3.8	4.2	2.9
	November						1.9	2.9	4.2	4.3	3.6	4.6	1.8
	December							2.6	3.9	2.9	4.7	5.9	5.7
1960	January								4.4	5.9	4.7	6.4	5.9
	February									4.9	4.9	4.6	14.3
	March										6.0	6.8	10.2
Total flowers cut per 12.5 sq. ft. 42 plants		600	642	639	664	756	682	694	695	654	552	457	489
per sq. ft. per 3.4 plants		48	51	51	53	61	55	55	56	52	44	37	39

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The results of this experiment (Table 4) are compared with comparable data from Ohio (4) and Colorado (2) in Table 5. Results from Long Island are practically iden-

Table 5

Year around flowering of Sim carnations grown from a single pinch at three locations.

Time of pinch	Time of Peak Productoin		
	Long Island[a]	Ohio[b]	Colorado[c]
January	June	June	July
February	June	June	July-Aug.
March	July	July	August
April	July	July	Aug.-Sept.
May	August	August	September
June	September	September	October
July	November	November	November
August	January	January	Jan.-Feb.
September	May-June	April	March-April
October	June	June	April-May
November	June	June	May-June
December	June	June	June

[a] Table 4
[b] Page 45, Figure 9, Reference 4
[c] Page 3, Table 1, Reference 2

tical with those from Ohio. From Table 5 it is readily seen that an August pinch gives best winter production. Although the plants in the Long Island test were planted and pinched in August, the Ohio and Colorado plants were planted earlier and pinched in August. Earlier planting and an August pinch or a pinch in late July and again in mid August should give winter production with a better yield.

References

1. Bing, Arthur and Oscar Maier. 1953. Carnation Return Crops 1951-52. New York State Flower Growers Bulletin 95.
2. Holley, W. D. 1959. Crop Control on Carnation. Colorado Flower Growers Ass'n Bul. 110.
3. Koon, Gordon. 1958. Continuous Culture of Carnations. Colorado Flower Growers Ass'n Bul. 108.
4. Nelson, Kennard S. and D. C. Kiplinger. 1957. Carnation Crop Control. Ohio Agricultural Experiment Station Research Bulletin 786.
5. Wagner, David L. and Holley, W. D. 1951. Carnation Timing. Colorado Flower Growers Ass'n Bul. 20.