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Bulletin 287 April 1974

The Flowering of Return Carnation Crops From Multiple Breaks Left Below a Cut

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No detailed studies on branching of carnation have been published. In 1972 a systematic study on branching was started at Colorado State University. We want to know what factors affect lateral branching. When are branches present and when not? Are there factors that cause high or low branching? What about the relative reproductiveness of laterals? It is hoped that a much better understanding of carnation branching will result from this research.

One of the experiments in this branching study is complete and ready to report. When flowers were cut from January to June, 1973, the following data were recorded: node at which flower was cut, and number of laterals and their position and size. As the laterals flowered the date and grade of flowers were recorded. Sufficient numbers of cases were recorded that we believe this information should contribute to our knowledge of the carnation.

The questions we sought to answer were: What advantage, if any, is there in cutting a flower above 2, 3, 4, or more lateral breaks? How does number of laterals affect the number flowering and the grade of flowers produced? Should all vegetative breaks be left for the next crop or should they be reduced in number by cutting flowers at lower nodes? What is the relative time required to flower for laterals in descending order below a cut?

The lateral branches in this study were present when a flower was cut. Cuts were made above the 7th node below a flower, or lower, and in almost every case the flower cut graded fancy. Too few standard grade or split grade flowers were cut to compare this influence on branching.

Table 1 summarizes most of the data taken. Average grade, number, and average time to flower is presented for each number of laterals left below a cut. Average grade of returning flowers was calculated by assigning 1 for fancy grade through 4 for design and split grades. Average time to flower was calculated by assigning a time in months for each break that produced a flower. Grade of returning flowers was influenced primarily by the conditions at the time of flowering. The number of branches below a cut was biased strongly by the vigor of that stem.

As the number of breaks left below a cut increased, the number of flowers produced in the return crop increased. Leaving 2 breaks below a flower resulted in 1.64 flowers in the return crop; three breaks produced 2.22 flowers, and 4 breaks produced 2.5 flowers. The average time for this return decreased slightly as the number of breaks increased, another relationship with vigor.

Table 2 contains similar but more detailed data in which results are presented by months the breaks were tagged and a flower was cut from January to June. Return crop flowers from March and April cuts graded lower as they were produced under summer conditions. The average time for breaks to flower on the return crop varied less than expected. January return time averaged 6.5 months, while May return was least at 5 months. October return would be expected to be slower than January.

This work by Tom Homan was supported in part by the Colorado Flower Growers Association, Inc.

Table 1. The grade, number of flowers, and time required to flower when 2 to 6 breaks were left below a cut. Breaks were left below cuts made January to June, 1973.

Number of stems cut	Number of breaks left below a cut	Mean grade of flowers from breaks	Number of flowers	Flowers per cut	Ave. months to flower
61	2	1.45	100	1.64	6.10
50	3	1.61	111	2.22	5.74
30	4	1.43	75	2.50	5.41
17	5	1.67	51	3.00	5.24
16	6	1.70	64	4.00	5.22

Table 2. Average time to return crop of flowers, mean grade, and number of flowers from cuts made above 2 to 6 breaks from January to June, 1973.

No. cuts	Breaks left below cut	Mean grade	Number of flowers		Ave. time to flower — months
January					
10	2	1.63	16		6.56
9	3	1.42	24		6.38
5	4	1.15	13		6.31
3	5	1.11	9		5.56
2	6	1.17	6		6.83
				Average	6.47
February					
8	2	1.73	15		6.00
2	3	1.00	5		5.40
3	4	1.56	9		6.00
1	5	1.25	4		6.50
1	6	1.00	3		5.67
				Average	5.84
March					
11	2	1.48	21		6.62
6	3	1.75	12		6.33
4	4	1.23	13		4.92
1	5	2.00	3		4.67
6	6	1.76	25		5.08
				Average	5.73
April					
8	2	1.55	11		6.82
11	3	1.69	26		6.19
9	4	1.74	19		4.84
7	5	1.95	21		5.00
2	6	1.67	9		5.44
				Average	5.60
May					
9	2	1.12	17		5.29
13	3	1.82	28		4.71
3	4	1.14	7		5.57
4	5	1.42	12		5.17
5	6	1.90	21		4.76
				Average	4.96
June					
15	2	1.30	20		5.55
9	3	1.50	16		5.50
6	4	1.50	14		5.36
1	5	3.00	2		5.00
0	6	—	—		—
				Average	5.46

Table 3. Average time in months to produce a flower and percent of breaks flowering when multiple breaks were left below a cut — January to June, 1973.

Number of breaks left below cut	Position of break below cut				
	Top	2nd	3rd	4th	5th
Time to flower					
2	5.83	6.49			
3	5.16	5.76	6.69		
4	4.72	5.77	5.70	6.00	
5	4.55	5.28	5.20	5.76	6.38
Percent flowering					
2	94	65			
3	88	82	52		
4	87	73	67	23	
5	85	94	74	50	38

Cutting flowers above the 7th node versus cutting at lower nodes had little effect on timing. When cuts were made above the 7th to 11th nodes, the average times required for the breaks to flower were 5.4, 5.3, 6.2, 5.8, and 5.9 months, respectively.

Many breaks on older carnation plants never produce a flower. Table 3 presents the time in months to return a flower and the percent producing flowers when varying numbers of breaks were left below a cut. Most breaks in the top position flowered, and usually in the shortest time. As the breaks descended to lower positions, more time elapsed before they flowered and the percent flowering decreased.

Most of the year the number of breaks that can be left below the 7th or 8th nodes is limited. Only very vigorous stems have 4 or more breaks. Many have none. The probability of producing a flower by the lower breaks is very low when more than 3 breaks are left. Possibly 3 breaks should be thought of as the maximum number that should be left because of possible crowding and competition with adjacent stems. During seasons favorable to branching, it would probably pay us to reduce the breaks left by cutting at a lower level. Five to 6 months later when these breaks flower, the environment may not be so favorable.