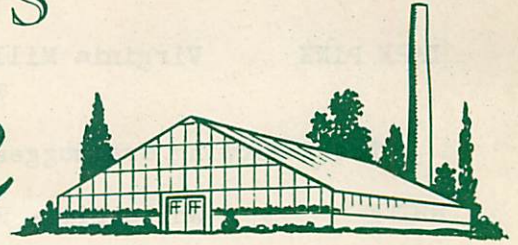




MINNESOTA STATE FLORISTS' *Bulletin*



University of Minnesota
Agricultural Extension Service, University Farm, St. Paul 1

Editor, Richard E. Widmer
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TWO-YEAR CARNATIONS

John R. Johnson, Minneapolis, Minnesota

Perhaps it would be more appropriate to call this article "Extending the Productive Life of Carnation Plants" since they have been carried in many cases for as long as five to seven years. Two-year carnations have passed beyond the experimental stage, however, and have become more or less an established practice. In fact, I would say that the practice has become an economic necessity.

There are many aspects to be considered before embarking on a program of growing carnations for more than one year. First of all, do you have an outlet for those summer blooms? The next question is which varieties are best adaptable to two-year culture? Whether you are a retailer growing for the local trade or a wholesaler growing for the shipping trade must also be taken into consideration. In general, the wholesaler grower who caters to the shipping trade must grow a higher quality flower, not necessarily a heavy producer but one that ships well. The Sim varieties, as an example, fall into this category. On the other hand, the retailer growing for the local trade doesn't need as hard a flower since he is not interested in its shipping qualities, but is usually more interested in the productivity of the variety. The variety Northland is a good example of this since it is a good producer with a large flower but a little soft for satisfactory shipping.

Varieties

The following are suggested for a local retail grower:

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|------------|---|
| WHITE | Northland - Good producer, large flowers, good stem. |
| RED | Tom Knipe - Good producer, large double flower, long, stiff stems even in dark weather, a light feeder. |
| | Jumbo Cardinal - Good producer, long, stiff stems even in dark weather, large flower during winter but gets small and single during the summer, good color. |
| LIGHT PINK | Hercules - Good producer, stiff stems, large flowers in winter but gets small and single during the summer. |

Apollo - Good producer, good color, a good summer flower but stems get brittle during the winter.

DARK PINK Virginia Miller - Excellent producer, stiff stems but flowers get small and single during summer.

The following are suggested for the wholesale shipper.

WHITE White Sim - Fair producer, large double flowers, long stems but stems get weak during dark weather.

RED Red Sim - Fair producer, large double flowers, long stems but stems get weak during dark weather.

LIGHT PINK Pink Sim - Fair producer, large double flowers, long stems but stems get weak during dark weather. During a prolonged heat wave, color fades badly and a few Apollo may have to be grown to cover this color range during the hot spells.

DARK PINK Sidney Littlefield - Large flower, stiff stems, poor producer.

YELLOW Miller's Yellow - Long, stiff stems, fair producer.

To combat the weak stems on the Sim varieties during dark weather, it is best if they can be grown in separated houses. If they have to be grown in a ridge and furrow range, however, it is advisable to grow them only on the north half of the houses and to grow the stiff-stemmed varieties on the south half where the shade of the gutter and adjoining house falls.

Carnations benefit more from maximum light intensity than almost any other greenhouse crop. The factors of maximum sunlight and cool nights are what make the Denver area so ideal for carnation culture. The plants that are in flower production will have to be shaded some during the summer to maintain the flower quality but the young stock should not be shaded at all.

Important Work

All work in the greenhouse should be considered important, and cutting the flowers is no exception. No one gets a better look at each individual flower than the person cutting the flowers, so he should be the first to spot an outbreak of red spider or note any damage from thrip. The first step in grading can be accomplished at the same time the flowers are being picked. For instance, the stems can be broken off short on splits and defective flowers that are injured by thrip, etc. However, we must not forget the pruning phase. In other words, all flowers should be cut well down on the stem, allowing only about two soft nodes for new breaks. By adhering to this method a more steady production is maintained and the stringing up of the plants doesn't get out of hand. Even so, some of the taller growing varieties must have four-foot supports.

Summer Care

You must bear in mind that the summer heat and long daylight hours will accelerate the production to approximately double the winter production. However, with this increased production the quality will drop. In fact, even among the best varieties, the percentage of good flowers will drop very low during a prolonged heat wave and the poorer varieties (usually higher production varieties) will produce hardly any salable blooms. This fact can change our entire perspective on growing carnations. Let us then consider the flowers merely as a by-product of our pruning operation, because our paramount

interest through the summer is to keep the plants in good condition. We must keep the flowers cut whether or not they are salable; that, of course, should be a standard practice the year around.

Another pitfall to add to the summer woes, and which is aggravated greatly by the summer heat, is that insect problem. In earlier years, this more than anything else was undoubtedly the deterrent factor in carrying carnations two years. Now there are a sufficient number of fairly good insecticides on the market so that we can at least hold our own with the insects, if we maintain a constant vigil and take immediate action at the first sign of a new outbreak.

The worst pest, of course, on carnations is red spider and we all know only too well how quickly they can ruin a crop if they are not held in check. The only other serious insect that we have to contend with on carnations, especially in hot weather, is thrip. Fortunately, they are easy to control, but because of this fact we are probably more apt to disregard the great damage they do to the flowers, and the extent to which they lower flower quality.

In the use of insecticides, don't stick with any one kind too long regardless of how well satisfied you are with it. It has been proved that sooner or later the insects, particularly red spider, develop resistant strains. Also, don't discard your sprayer in favor of aerosol bombs. I don't mean to imply that the bombs aren't any good anymore, but there are times when a good spraying is much more effective in cleaning up a particularly persistent infestation.

As is the case with all living things, it's constant care that pays off and it's the effort beyond which is normally deemed necessary that makes the difference between a normal crop and a good crop.

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LAYING UP THE BOILER

Marvin Gould¹

(Editor's Note: Some of the following suggestions may be a little late for the 1953 season, but keep them in mind for the future).

1. Start any and all work to be done on the boiler within 72 hours after the close of the heating season.
2. The fires shall be drawn and, following the removal of all combustible, the boiler shall be drained when still quite warm. (NOTE: Valves to all radiators and all other heating elements shall be opened wide to permit condensate to drain back to the boiler or boiler feed pump.)
3. All manhold and hand hold plates as well as all washout plugs shall be removed from the boiler and set to one side.
4. The water side of the boiler's surface shall be washed clean and free from all loose scale and sediment by flushing thoroughly with a strong water pressure from a hose.
5. Use all washout openings, starting at the lowest point in the boiler and working toward the top-after which the boiler should be again flushed from the top down to the lower openings.
6. Flush out thoroughly all boiler accessories such as water column piping, water column, gauge glass, pressure damper regulator and steam gauge. All automatic controls on mechanically fired boilers shall also be thoroughly cleaned.
7. Open the city water or make-up water valve to flush the bottom of the boiler; there-after make certain this valve is closed tightly and does not leak.

¹ From Society of Iowa Florists Newsletter, July, 1952

8. Equally important is the care given to the proper preparation of the fire surfaces of the boiler. The fire tubes or flues shall be punched or scraped thoroughly, using a scraper which cuts down to the tube wall, removing all soot and carbon.

9. The entire grate assembly shall be removed from the boiler and set aside for inspection.

10. The corners of the firebox as well as the inside fire box sheets, crown sheet and front and rear tube sheets shall be scraped free from carbon and other foreign matter, using a wire brush and scraper.

11. The outside fire box sheets, outer shell and throat sheet on all bricked-in boilers shall be thoroughly cleaned of soot and carbon. Also the inner brick walls and boiler shelves shall be cleared of all soot including the combustion chamber, smoke breeching and base of stack.

12. All soot shall be removed from the boiler room.

13. Inspect boiler thoroughly for any weakened or corroded places and have repairs made as early as possible.

14. Coat all fire surfaces as far as possible with a mineral oil, giving special attention to the fire tubes, the corners of the firebox at grate level and the blow-off connection.

15. Allow boiler to remain dry and empty all summer, permitting free circulation of air through all parts of the boiler, by allowing all doors and washout openings to remain open.

16. If boiler room is damp or air circulation is poor, moisture may be absorbed by placing in the boiler pans of unslacked lime-replacing the lime when necessary.

17. Clean grate assembly and inspect thoroughly; replace any parts that are burned or even slightly warped.

No effort should be spared in properly cleaning the boiler. A thorough cleaning is the only assurance of freedom from boiler trouble through the coming heating season. With proper attention steel boilers have served very efficiently for years.

MALFORMATION STUDIES ON BETTER TIMES ROSE

William H. Hubbard²

Large numbers of roses produced as out flowers are reduced in value due to malformation of the flowers. Malformed or "crippled" roses have petals that are shortened and unevenly developed, resulting in a bud that is not shaped symmetrically. Petal edges turn inward in contrast to the gentle outward curvature of normal rose petals. The point of the bud is flattened in severe cases, and a blunt, rounded shape results instead of the sharp, conical form of a perfect rose.

Crippling tendencies vary markedly between varieties. Better Times--the major greenhouse variety--is most seriously affected, and it was because of this variety that the study was instigated. Much of the time the crop is relatively free from crippling, yet twenty percent of the cut may be malformed under certain conditions.

High temperature. -- Generally, higher-than-normal temperature produced a significant increase in crippling in roses. Any temperature over 70° produced more malformation than the normal growing temperatures of 60 to 65°. Highest malformation was obtained after treatment with 90°F. One hour of high temperature crippled as many flowers as 12 hours of a similar temperature. Also, no significant variance was obtained between crippling from 1 and 7 days of continuous high temperature.

²Condensed from Colorado Flower Growers Association Bulletin 39, January, 1953.

Stage of bud affected. -- Malformation tendencies occurred significantly more on buds subjected to high temperatures at 3 to 10 days prior to flowering in comparison to buds of a more mature stage. However, no difference was noted between buds treated 3 to 10 days, and those 6 to 13 days prior to flowering. The critical stage from high temperature was between 4 and 9 days prior to flowering, with peak crippling on the sixth day.

Time of the Year. -- Considerable variability was noted between crippling from treatments at different periods of the year. A graph of malformation on check plants throughout the fall, winter and spring indicated high crippling at Fort Collins during January, February, March and April. Under the natural conditions occurring this particular year, the fall season produced relatively few abnormally shaped flowers.

Soil Moisture effects. -- Three moisture levels from 0 to 20 inches of mercury tension were investigated to examine the effect of the watering factor on malformation. In conjunction with the soil moisture levels, various temperature treatments were applied to plants to ascertain the interaction effect of these two conditions. Within these soil-moisture levels, no significant differences were obtained in the production of cripples. In addition, various combinations of the three moisture levels and the four temperatures resulted in no significant variance.

Vigor. -- In comparing over 11,000 flowers cut over a 6-month period, normally shaped flowers had stems averaging 1.09 inches less than crippled roses. This difference was highly significant statistically. The rapidity of development of crippled vs. normal roses was investigated, and a near-perfect correlation was obtained between rapidity of development and malformation.

Heredity as a factor. -- The hereditary constitution is a primary factor in influencing crippled flower production, although the aforementioned environmental factors play a significant part.

THE RETAIL FLORIST BUSINESS

Horst Von Oppenfeld³

Florists who rent their stores and carry on a strictly retail business are likely to have a higher return on their investment than florists who combine a growing operation with their retail trade. This fact was revealed in a study of the retail florist business organized by the departments of Floriculture and Agricultural Economics. Detailed information on the financial structure and management practices of forty-eight florists** was collected for 1949 and 1950.

A great contrast was evident between the specialized retail florist, renting store and work space and the florist combining both retail and growing operations in his own facilities (table 1). Both groups A and D had an average sales volume of approximately \$90,000, but their total assets were widely different. Owners, Group D, averaged \$93,645 of total assets, more than three times the capital investment of renters, Group A. In other words, the annual sales volume of these renters was more than three times as big as their total investment. In contrast, sales of Group D, owners, did

³ From Farm Economics, No. 189, March, 1953, publication of the Dept. of Agricultural Economics, Cornell University.

**The florists who reported to the survey were divided into five groups. These divisions were based on whether the florist rented or owned his premises and whether or not he combined greenhouse operations with his retail business. The financial structure of these different enterprises was analyzed from the balance sheets of the reporting florists.

not even equal their capital.

The florist who rented his place of business made the most efficient use of his capital. Expressing the average fixed assets as a percentage of total assets, the renters, Group A, had only 25 per cent of their capital in fixed assets, while for the owners, Group D, the ratio was 73 per cent. The proportion of operating capital was much greater in the specialized retail outlets with rented stores.

The net profit of owners, Group D, \$3,485, was wiped out when 4 per cent interest was charged on their large capital investment. Renters had \$1,034 net profit after deduction of 4 per cent interest on their smaller capital investment. Some florists were obviously living on the interest of their investment, rather than on profits.

The seasonal pattern of the retail florist business was striking. The sales curve peaks are partially explained by a greater physical volume of sales at Easter, Mother's Day and Decoration Day and in the Christmas season. Sales fluctuations are accentuated by the effect of holiday demand on the price of flowers and by the fact that the holiday supply of flowers is limited by greenhouse capacity. The florist business is slack during the summer when flowers are grown in outdoor ranges and are available at low prices.

Operating expenses and total wages paid by retail florists, although not fluctuating so widely, followed the trend of sales.

Some of the florists included in this study were successful in combining the growing operations with the retail business. Their cost of goods sold was much less than either the rented or owned group of retail outlets. Many of those who combined the two operations had a typical family business, often a father-son or brother partnership. One of the partners would be in charge of growing flowers, the other partner would operate the retail store. A family business is flexible in the supply of labor, a great advantage for holidays and weekends. Nevertheless, this study indicates that it is easier for a retail florist to be successful if he specialized in retailing rather than if he attempts both retailing and growing operations. A strictly retail business requires considerably less capital and has a equal if not better chance for financial success.

Table 1. Balance and Income Sheet Information, 48 Retail Florists in 18 States, 1949 and 1950.

Factor	Retail outlet only, no growing operation		Retail outlet combined with growing operation			Average
	Rented	Owned	Rented	Owned	Owned	
	A	B	C	D	E	
Number	27	3	4	7	7	48
Average Assets	\$27,758	\$67,757	\$15,264	\$93,645	\$81,601	\$46,677
Average Sales	90,529	141,141	60,377	90,458	99,432	92,467
Average Fixed Assets as Per cent of Total Assets	25.3	64.7	31.6	72.5	62.2	40.4
Net Income before Taxes	1,708	2,712	6,846	3,485	6,836	3,206
Interest at 4 Per cent on Net Worth	670	1,716	544	3,487	2,479	1,309
Net Profit before Taxes	1,038	996	6,302	-2	4,357	1,807

NEW BULLETIN

Roses for the Home. --- Home and Garden Bulletin No. 25 of the U.S. Department of Agriculture should be of great assistance to anyone who grows roses as a hobby. The authors, S.L. Emsweller, W.D. McCellan and Floyd Smith, have done a fine job of presenting all phases of rose growing in this well illustrated bulletin.

Many florists sell large quantities of roses each spring. Since many of the customers expect the florist to have an answer for all cultural problems that arise during the summer, it may be wise to recommend this bulletin to all rose customers.

Copies of the bulletin may be obtained for 15 cents each from the Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C.

ALUMINUM NAILS FOR FLATS⁴

Aluminum nails had no or only slight corrosion when embedded in wood treated with copper naphanate No. 10 or No. 20 and the wood was buried in greenhouse soil for 11 months. Copper nails had slight and medium corrosion, whereas galvanized iron, iron and lacquered iron nails exhibited medium, heavy or very heavy corrosion.

BOTRYTIS ON SNAPDRAGONS⁵

A.W. Dimock

Although Botrytis is not likely to become a problem on snapdragons during the summer months, it may be well to plan a preventive program at this time. Frankly, we do not have any sure-cure to propose at this time, but there are a few points which may help.

First, Botrytis thrives on unsanitary conditions, developing profusely on fallen leaves and petals, old dying plants, etc. Obviously, then, complete sanitation at all times should greatly reduce the hazard of Botrytis rot. Second, Botrytis is favored by excessive moisture and high humidities. This means that increased ventilation and heat earlier in the afternoon should help. Also planting with greater space between rows to allow better air movement across the benches may improve conditions. The plants might be spaced a little more closely across the bench to get the same total per square foot.

Third, spraying the young plants several times with zineb (1 1/2 lbs. Parzate or Dithane Z-78 per 100 gallons) may offer considerable protection. For a combined mildew and Botrytis spray, add about 2 lbs. wettable sulfur with the zineb. Spray about every ten days until the growth is too thick to do a job of covering. By this time a good protective fungicidal coating will be present on the bottom growth, which is where both Botrytis and mildew get started. If a second crop is to be cut, repeat this spray program after the first crop is cut back.

⁴Massachusetts Flower Growers Association Bulletin 12, January, 1952.

⁵From New York State Flower Growers Bulletin 93, May, 1953.

STAFF CHANGES

Prof. W.H. Alderman who was head of the Department of Horticulture for the past 32 years retired on July 1. We are glad to report that his friendly smile is seen in the office at least once a week, indicating that he still has a lively interest in horticulture. It is rumored that his golf score makes many a younger man envious.

Dr. L.C. Snyder, who has been extension horticulturist since 1945, is the new head of the Department of Horticulture. Dr. Snyder is well known throughout the state where he spent approximately seventy-five percent of his time working on ornamental horticulture and the remainder with fruits. Dr. Snyder is also known for his broad knowledge and interest in all phases of horticulture.

Dr. Snyder's replacement has not been announced at the date of this writing.

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