Colorado Flower Growers Association, Inc.

IN COOPERATION WITH COLORADO STATE UNIVERSITY
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An Economic Analysis of the U.S. Carnation Industry-Part II. Growers'

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Carnation producers, shippers and wholesalers were contacted by mail survey in December 1965. Results in brief from growers along with production costs were published in Colorado Flower Growers Association Bulletin 196. This bulletin summarizes and discusses the information from the Grower's Survey. Bulletin 198 will report on carnation shippers and wholesalers and supply information on the annual flow of U.S. carnations from producer to market.

Estimated investments and depreciation

Table 1 was assembled to establish approximate average investments and depreciation per acre for the seven U.S. carnation producing areas. The investment values are based on representative figures reported by growers in the survey for new greenhouse construction, the present value of new benches (redwood or similar) and the present value of equipment and other buildings. Land values, as reported by growers, were extremely variable; thus arbitrary values of $10,000 per acre were used for California and $5,000 for all other production areas.

The total investments essentially fall into three groups: 1) Southern California with $48,896 per acre; 2) Northern California, with $121,209 per acre; and 3) the other areas all in excess of $220,000 per acre.

The investment in greenhouse construction causes the major difference in total investments between producing areas (Table 1). California growers also reported a smaller average investment per acre for equipment and other buildings. Table 1 is required to analyze returns to land, capital, and management as a percent of total investment (Tables 2 and 3).

Table 1. Estimated investments (current) and depreciation of greenhouses, benches, and other buildings per acre of seven U.S. carnation producing areas.

Investments and depreciation per acre	Production areas						
	S.Calif.	N.Calif.	Colo.	Penn.-N.Y.-N.J.	Mass.	N.Caro.-Va.	Midwest
Greenhouses[1]	$21,780	$87,120	$174,240	$174,240	$174,240	$174,240	$174,240
depreciation	2,178	4,356	8,712	8,712	8,712	8,712	8,712
Benches[2]	7,500	7,500	7,500	7,500	7,500	7,500	7,500
depreciation	750	750	750	750	750	750	750
Equipment, other buildings[3]	9,616	16,589	40,451	53,185	42,682	85,496	38,190
depreciation	481	829	2,023	2,659	2,134	2,275	1,710
Land[4]	10,000	10,000	5,000	5,000	5,000	5,000	5,000
Total investment[5]	48,896	121,209	227,191	239,925	229,422	232,236	220,936
Total depreciation	3,409	5,935	11,485	12,121	11,596	11,737	11,172

[1] $.50/sq.ft. for S. Calif., $2.00/sq.ft. for N. Calif., $4.00/sq.ft. for other areas. Depreciation at 10% for S. Calif., 5% for all other areas.
[2] $7,500/acre, depreciated at 10% for all areas.
[3] Average equipment and other buildings investments per acre, reported by growers, depreciated at 5%.
[4] $10,000/acre for S. and N. Calif., $5,000/acre for all other areas.
[5] Land, equipment, and all structures.

Financial summary per carnation enterprise by production areas

Table 2 summarizes the financial situation of an average enterprise for each of the seven U.S. carnation producing areas, and also on a per acre basis for all items and on a per bloom basis for total revenue, cash costs and a return to fixed factors. The data used for the analysis in this table were obtained from

[1] This is a condensed version of the thesis written by S. T. Besemer in partial fulfillment for the M.S. Degree at Colorado State University. The complete thesis may be obtained on loan from CSU upon request.

42 selected growers who reported complete data for all items necessary for the summary.

California enterprises have the lowest revenues per acre and per bloom and also the lowest costs and investments. California enterprises, however, show the highest rates of return to land, capital, and management as a percent of total investment. Colorado, Pennsylvania-New York-New Jersey, and North Carolina-Virginia enterprises operate at a higher level of revenues, costs and investments per unit. The rate of returns to land, capital, and management vary primarily due to some differences in cash costs relative to revenue.

Massachusetts and Midwest enterprises had smaller revenues per unit than other eastern areas and relatively higher cash costs. Massachusetts shows no returns to land, capital, and management. No contribution is made to depreciation and only a partial return for family living. The Midwest enterprises show a positive but small return to land, capital, and management.

How to use Table 2

To compare your own financial performance with the average for your area, or other areas, you will need to plug in some of your own figures. Your total revenue less your cash costs and the $4000 for family living gives your return to land, capital and management. Deduct your depreciation to get your net return. Divide this net return after depreciation by the value of your total investment to get your internal rate of return. The higher your internal rate of return, the sounder your business, whether you are operating with your own capital, borrowed capital, or a combination. The normal minimum percent interest is included in Table 2 to remind you that at least 6% of your total investment should always be deducted as the minimum return to capital. After deducting all of the above and 6% of the value of total investment, the residue gives you returns to management.

Financial summary per carnation enterprise by size for the U. S.

In addition to analyzing the financial situation per enterprise and per acre or per bloom by production areas (Table 2) the same 42 U.S. carnation growers were regrouped as small, medium, or large enterprises. Nearly equal representation of growers from each production area was achieved for each enterprise size group. This arrangement meant that a California grower placed in the "small" group might be equal in size or larger than an eastern area grower placed in the "large" group, etc. The objective was to analyze this cross section of U.S. carnation growers to determine if relative size of enterprises caused differences in financial success.

Table 3 summarizes the financial situation of the three size groups for an average enterprise, as well as on a per acre basis for all items; and on a per bloom basis for total revenue, cash costs, and a return to fixed factors. The small and medium sized enterprises appear to produce about the same returns to land, capital, and management as a percent of total investment. It appears that little contribution is made for management by these two groups. The large enterprises indicate a substantial return on investment allowing for increased payments for management or family living.

Economic analysis of carnation enterprises

An economic analysis of any single carnation production area presents numerous difficulties. Factors influencing the comparison of financial situations for several carnation enterprises are the many characteristics of individual firms. The most notable variations are size and relative efficiency, location, age of facilities, age and desires of the operator, and surrounding economic forces. There is always some element of doubt on the ability or sincerity of growers to contribute accurate data for a survey analysis. Even if absolutely reliable data can be obtained, the researcher must cope with wide variations in land values, age and relative values of capital investment, and depreciation rates. A realistic return to land, capital, and management expressed as a percent of total investment in land and improvements, is somewhat difficult to establish for a single enterprise and even more difficult to obtain as an average for several enterprises. However, where economic differences were hypothesized between carnation production areas of the United States, this analysis of financial situations for average enterprises in each area supports the hypothesis.

Tables 2 and 3 illustrate the relative financial differences per average enterprise and per acre or per bloom between production areas and between sizes of enterprises. The high internal rates of return of 37.9 percent for Southern California and 20 percent for Northern California carnation enterprises substantiates the rapid expansion of these areas.

The format of the summary tables is organized so that the reader can make his own decisions as to what portions of the internal rate of return can be regarded as a payment for management or family living. For example, by subtracting the "expected" return of 6 percent on total investment of $1,767 per acre for Southern California (Table 2) from the return to land, capital and management after depreciation ($11,148) the resulting $9,381 represents a return to management. Adding this to the family living allowance of $828 per acre, the total of $10,209 may be regarded as the "net income" per acre to the operator for family living and management. Similarly, the "net income" per acre per operator would be $11,393 for Northern California; $17,127 for Colorado; $11,366 for Pennsylvania-New York-New Jersey; and $16,951 for North Carolina-Virginia.

The analysis of Massachusetts and Midwest enterprises indicate a different financial situation. Massa-

Table 2. Average revenues, costs, and investments and return to land, capital, and investment for average enterprises in seven U. S. carnation production areas.

Average for enterprise	Production areas						
	So. Calif.	No. Calif.	Colo.	Penn.-N.Y.-N.J.	Mass.	No. Ca.-Va.	Mid-west
Total revenue	$185,768	$83,878	$56,929	$65,043	$65,430	$102,500	$43,054
Total cash costs[1]	111,417	45,603	32,033	39,141	44,273	54,880	29,765
Return to fixed factors	74,351	38,275	24,896	25,902	2,157	47,620	13,289
Family living[2]	4,000	4,000	4,000	4,000	4,000	4,000	4,000
Return to land, capital, mgmt.	70,351	34,275	20,896	21,902	negative	43,620	9,289
Depreciation[3]	16,465	10,683	8,269	10,182	9,509	15,610	7,262
Return to land, capital, mgmt. after depreciation	53,886	23,592	12,627	11,720	negative	28,010	2,027
Value of total investment[4]	142,234	118,096	83,589	102,868	96,113	157,762	66,929
6% of total investment	8,534	7,085	5,016	6,172	5,767	9,466	4,016
Internal rate of return[5]	37.9%	20.0%	15.1%	11.4%	negative	17.8%	3.0%
Average per acre and per bloom							
Total revenue, per acre	$38,441	$46,599	$79,068	$77,432	$56,622	$77,068	$66,237
per bloom	.0393	.0485	.0801	.0928	.1008	.0911	.0857
Total cash costs[1], per acre	23,056	25,335	44,490	46,597	53,992	41,263	45,792
per bloom	.0236	.0264	.0451	.0559	.0961	.0488	.0592
Return to fixed factors, per acre	15,385	21,264	34,578	30,835	2,630	35,805	20,445
per bloom	.0157	.0221	.0350	.0369	.0047	.0423	.0265
Family living[2], per acre	828	2,222	5,555	4,762	4,878	3,008	6,154
Return to land, capital, mgmt., per acre	14,557	19,042	29,023	26,073	negative	32,797	14,291
Depreciation[3], per acre	3,409	5,935	11,485	12,121	11,596	11,737	11,172
Return to land, capital, mgmt. after depreciation, per acre	11,148	13,107	17,538	13,952	negative	21,060	3,119
Value of total investment[4], per acre	29,448	65,609	116,096	122,462	117,211	118,618	102,968
6% of total investment	1,767	3,936	6,966	7,348	7,033	7,117	6,178
Internal rate of return[5]	37.9%	20.0%	15.1%	11.4%	negative	17.8%	3.0%
Number of growers reporting	4	8	16	7	2	2	3
Average acres per enterprise	4.83	1.80	.72	.84	.82	1.33	.65

[1]Hired labor, fuel, utilities, plants, taxes, supplies, insurance, miscellaneous.
[2]Assumed, based on minimum standard per family of $4,000.
[3]Based on estimated investments and depreciation per acre (Table 1), converted to an enterprise basis for Tables 2 and 3.
[4]Land valued at $10,000 per acre for California areas and $5,000 per acre for all other areas. The improvements are valued as in 3 but assumed to be depreciated by half.
[5]The return to land, capital, and management as a percent of total investment.

Table 3. Average revenues, costs, and investments and return to land, capital, and management for 42 U. S. carnation enterprises grouped by size.

Average per enterprise	Size of enterprise		
	Small	Medium	Large
Total revenue	$29,939	$52,602	$135,634
Total cash costs[1]	17,709	34,752	77,700
Return to fixed factors	12,230	17,850	57,934
Family living[2]	4,000	4,000	4,000
Return to land, capital, mgmt.	8,230	13,850	53,934
Depreciation[3]	4,703	7,638	16,852
Return to land, capital, mgmt. after depreciation	3,527	6,212	37,082
Value of total investment[4]	48,701	77,354	111,688
6% of total investment	2,922	4,641	6,701
Internal rate of return[5]	7.2%	8.0%	33.2%
Average per acre and per bloom			
Total revenue, per acre	$60,989	$53,202	$56,310
per bloom	.0776	.0686	.0548
Total cash costs[1], per acre	36,075	35,148	32,258
per bloom	.0459	.0453	.0314
Return to fixed factors, per acre	24,914	18,054	24,052
per bloom	.0317	.0233	.0234
Family living[2], per acre	8,148	4,046	1,661
Return to land, capital, mgmt., per acre	16,766	14,008	22,391
Depreciation[3], per acre	9,580	7,725	6,996
Return to land, capital, mgmt. after depreciation, per acre	7,186	6,283	15,395
Value of total investment[4], per acre	99,209	78,236	46,368
6% of total investment	5,952	4,694	2,782
Internal rate of return[5]	7.2%	8.0%	33.2%
Number of growers reporting	11	16	15
Average acres per enterprise	.49	.99	2.41

[1]Hired labor, fuel, utilities, plants, taxes, supplies, insurance, miscellaneous.
[2]Assumed, based on minimum standard per family of $4,000.
[3]Based on estimated investments and depreciation per acre (Table 1), converted to an enterprise basis for Tables 2 and 3.
[4]Land valued at $10,000 per acre for California areas and $5,000 per acre for all other areas. The improvements are valued as in 3 but assumed to be depreciated by half.
[5]The return to land, capital, and management as a percent of total investment.

chusetts, even if depreciation is considered not applicable as a cost, still shows no contribution for family living or management, with a 6 percent return on investment. This would indicate that growers are "living off their depreciation" or actually incurring a loss from carnation growing. However, the author suspects that the data provided by the growers from Massachusetts are partially in error. The production of blooms per acre is not as high as it should be. A higher yield of blooms per acre would increase the total revenue. Also, the average cash costs per acre seem higher than they should be.

The Midwest enterprise analysis indicates that no contribution is made for management with a 6 percent return on investment. If depreciation is not considered, then a contribution for management of $8,113 exists for a total "net income" per enterprise acre of $14,267 including family living.

For the purpose of analyzing average enterprises, several decisions had to be made to obtain total investments for land and structures and the rate of depreciation to use. Land values are extremely variable, depending on location. Land values reported by growers in the survey ranged from $200 to over $100,000 per acre. Average land values used in the summary tables were $10,000 per acre for California production areas and $5,000 per acre for all other areas. Investments for greenhouses were based on what the majority of growers in the survey considered it would cost for new construction. Therefore, a figure of 50 cents per square foot for ground covered was used for Southern California, $2 for Northern California, and $4 for the other areas. A standard value of $7,500 per acre or $1 per linear foot for a 42-inch-wide bench was used for all areas. The remaining capital investments include equipment and other buildings which were reported by growers.

Depreciation is one of the most difficult problems to handle in a cost analysis. The rates used in the analysis are realistic for very recent enterprises but not for older operations. Many eastern and midwest growers possibly do not have depreciation any longer unless it is considered as a reserve for replacement of facilities.

The value of the total investment of land, and all improvements used in the summary is reasonably realistic. The new value of all improvements (greenhouses, benches, equipment, and other buildings) was reduced by half to represent an average condition of new and old enterprises. Of course, the value of land remains at its full assumed value.

Land value appreciation, particularly in encroaching urban areas, may possibly offset the depreciation of improvements. This may be a factor to explain why growers in some locations can continue to operate despite the fact that their return on investments seems low. The value of land in California, and possibly other areas too, could well be much higher, and a carnation enterprise would still show a good return on investment.

The size of a carnation enterprise appears to be related to financial success. The analysis in Table 3 illustrates that small (one-half acre) and medium (one acre) enterprises, as a cross-section of all U.S. production areas, return between 7 and 8 percent of the investment to land, capital, and management. If a 6 percent return to land and improvements was acceptable, then the small enterprises would make a contribution to management and family living of about $4,605 and the medium enterprises $5,571. The large enterprises (2.4 acres) return about 33 percent of the investment to land, capital, and management. This allows for a much larger contribution of $30,381 for management for large enterprises plus the $4,000 allowed for family living.

Financing

Although the majority of growers reporting in this survey indicated bank financing is used for major capital items, the author's knowledge of the industry leads to the conclusion that bank financing for carnation growers needs improvement.

Bankers frequently state their cases against investment in carnations as follows:

1. Greenhouses have single-purpose use.
2. Management or business organization of many greenhouse operations is not set up for continuation.
3. Instability is due to annual fluctuation of flower prices.

The bankers' ideas contain some worthwhile instruction for the carnation industry. Greenhouses are single purpose in a sense of being designed only to grow plants. However, a greenhouse business properly organized and managed and in the right location can usually return a profit on the investment comparable to or better than many other normal business ventures. A greenhouse business can frequently overcome the capital investments in 5 or 10 years, a shorter period of time than some types of businesses. Well managed, a greenhouse operation has many alternatives for various crops.

The bankers' strongest reason against financing may be that of improper management or business organization for continuation of the business. Growers might consider this point and seek legal advice for corporate arrangements to strengthen this position.

Instability due to annual fluctuation of flower prices is only partially true. The nature of holiday demands is not understood by many outside the flower industry. Prices are very stable from year to year. Prices of carnations are showing greater stability as western production areas increasingly influence the market with more consistent seasonal production, quality, and a tendency toward slightly lower but firm pricing.

The carnation industry and other phases of the total flower industry must organize, publicize, and thereby strengthen the relationships with bankers and other lending agencies on the potential of flower production.

Management

Cultural problems are no longer of primary concern in carnation production. The authors could cite several examples of recently successful growers who had little or no background in cultural techniques but have exceptional managerial ability. Management is becoming more important in today's economy.

Management decisions frequently require records. Carnation growers could improve their management by striving to keep better records of investments, costs, returns, flower yields, and cultural information.

Management requires constant reappraisal, projection of future trends, and evaluation of alternatives. Time is a factor related to selection of alternatives. Growers must constantly determine their costs and profits. Alternatives are numerous; sell out and reinvest capital in more lucrative enterprises, sell out and retire, change to a more profitable crop, relocate in the same general area, modernize the present facilities, relocate in a more progressive area or climate, transform the business to some other form such as a garden center, hire a good manager, or many others.

The U.S. carnation industry must consider the possibility of competition not only within the national boundaries but from many other "natural" carnation producing areas of the world. The time may come when worldwide production can be systematically regulated so that unlimited supplies of carnations and other flowers can be imported at extremely competitive costs and distributed through mass merchandising outlets. Are U.S. growers going to be a part of this economic system or sit by and watch it happen?

Only a progressive industry can survive in the economy of today. The members must think big and train and utilize the best managerial talent possible.

Your editor,

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