

A STUDY OF THE CONSUMER PREFERENCE OF
SELECTED CUT FLOWERS

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ABSTRACT

A STUDY OF THE CONSUMER PREFERENCE OF SELECTED CUT FLOWERS

by Yun-Teh Han

The florist industry is now in the budding stage of a marketing renaissance. The latest surge of interest has been aroused by sluggish market conditions typed as "over-production" and "under-consumption."

One approach toward the alleviating of such a situation would be an increase in the consumption of the products for "not occasional events" market. This accounts for the current emphasis on consumer preferences.

This study sought information germane to present day consumer's flower preference. As in other preference studies, it sought consumer response to several physical attributes of five major cut flowers: carnations, pom-pon chrysanthemums, standard chrysanthemums, gladiolus, and roses. The stimuli selected for this study were color, grade, number, and price.

To index the above mentioned consumer flower preferences, the Michigan State University's Consumer Preference Panel was utilized from 1957 until 1963.

Color preference study revealed that preference for individual colors was not pronounced in carnations, pom-pom chrysanthemums, and gladiolus. Red roses and yellow standard chrysanthemums were the favored in these two types of flowers.

In general consumers preferred large numbers of flowers. However, when the flowers were priced the preference-pattern might change. This in turn depended upon whether the price was considered high or low by the consumer.

The overall results of grade preference studies compared favorably with the established practices.

A retail sales survey was conducted to test the relationship of consumers stated preferences (in color, grade, number, and price) of the five concerned flowers to their marketing behavior revealed by the reporting florists in the State of Michigan.

This study of consumer flower preferences provides the basis for further studies of consumer preferences for flowers. This in turn should assist the floral industry to find new customers, and to better serve the American consumer with a product which plays a role in nearly every society in the world.

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CHAPTER I

INTRODUCTION

Purpose of Study

The market success or failure of a given product depends upon consumer preferences, particularly if there are also good substitute commodities available.

In spite of this much marketing research in floriculture has been producer-oriented rather than consumer-oriented. Flowers have been marketed without benefit of investigation into the consumers' desires regarding the product. To throw some light on the problem, this author undertook a consumer-oriented cut flower preference study in the period between January 1957 and February 1963. The over-all objective was to explore consumer preferences for cut flowers, in the Greater Detroit area. Simultaneously, in order to supplement the information from consumers, a retail florists survey was conducted in the entire state of Michigan.

The research was designed to be intensive covering five major cut flowers and using selected panel participants

representative of the particular area involved. It was also designed to provide an insight into the dynamics of consumer desire for the four kinds of cut flowers involved: carnations, chrysanthemums, gladiolus, and roses.

With adequate consumer preference information in the hands of producers and distributors, consumers may be better able to obtain what they want. If the information makes possible any reduction in waste and marketing costs, the savings may be passed on to the consumer. Hence, this can make a significant contribution to the improvement of floricultural marketing and perhaps may increase the demand for flowers.

Economic Significance of the Study

Economic Importance of Florist Crops

Florist crops are classified by the U. S. Bureau of the Census in a rather heterogeneous classification identified as "horticulture Specialties". The 1950 Census of Agriculture and the Special Census of Horticultural Specialties for the same year reveal the economic importance of these crops. Only recently has the full significance of these crops been generally recognized.

Fossum (105), presented a report concerning the "trade in Horticultural Specialties". There he pointed out the position of horticultural specialties in agriculture:

During the first half of this century, horticultural specialty crops became increasingly important in the agriculture of every State and region of the United States. By 1950, these crops made up nearly 2 per cent of the value of the Nation's sales of farm products.

. . . From 1890 to 1950, greenhouse crops were the major kind of horticultural specialty production. Nursery crops usually amount to about half the value of greenhouse production. Until recently, the growing of bulbs and flower and vegetable seeds have accounted for the remaining segment of the total for horticultural specialties. Since 1930, outdoor production of flowers has become a significant factor in the total production of horticultural-specialty farms in the United States.

Furthermore, census figures for 1949 reveal that the sales of horticultural specialties by farmers, over 60 per cent of which were florist crops, while 57 per cent fell in this category in 1959.¹

Florist products may be divided into three general types as follows: (1) cut flowers, (2) potted plants, (3) bulbs, plants, rooted cuttings and flower seed. Whereas

¹c.f. U.S. Bureau of the Census, United States Census of Agriculture: 1950, Special Reports, Horticultural Specialties, Vol. 5, Part I (Washington: Government Printing Office), pp. 33, 429-433, 733, 755; Census of Agriculture: 1959, Special Reports, Horticultural Specialties, Vol. 5, Part I, pp. 26-27, 45-59, 109-111, 158, 168, 175.

cut flowers accounted for about two thirds of the value of florists' crop in 1949, they accounted for about one half in 1959.² Cut flowers represent the most important single group of crops classified as horticultural specialties. They accounted for over 40 per cent of total sales in 1949, and 28 per cent in 1959.

This study covered only the five major cut flowers grown in this country, namely: carnation, "standard" chrysanthemums, "pompon" chrysanthemums, gladiolus, and rose. And they are rated the first five ranks of cut flowers (by value of wholesale prices) in both 1949 and 1959 Census Reports of Horticultural Specialties.

Similar trends in the importance of florist production are also true in the State of Michigan. Michigan's production of Horticultural Specialties has expanded more rapidly relative to Michigan agriculture, than that of the United States. Von Oppenfeld (84), pointed out that this favorable rate of growth has been clearly evident since 1940 and the continuing growth of the horticultural specialty field in Michigan offers continued opportunity for producers of flowers, plants and bulbs.

²U.S. Bureau of Census, Special Reports, Horticultural Specialties, op. cit., 1950, pp. 33-37, 377 and 755; U.S. Bureau of Census, Special Reports, Horticultural Specialties, op. cit., 1959, pp. 45-49.

Commercial establishments growing horticultural specialties in Michigan produced crops valued at \$11.2 million in 1949, \$19.4 million in 1959. Cut flowers and related plants made up two-thirds of the total in 1949, one-half in 1959. Roses continue to be the largest single money crop, with a value at the production level totaling over \$1,178,000 in wholesale value in 1959. Pompon chrysanthemums were the second most valuable crop, followed closely by carnations and then by standard chrysanthemums, Gladiolus sales ranked 4th in wholesale value in the state. (U.S. Department of Agriculture report on cut flowers, Production and Sales, 1958-59, Intentions for 1960 in Ten Selected States).

The greatest increase in dollar value for the period from 1958 to 1959 occurred in the value of the gladiolus crop. The value of gladiolus sold in the state in 1958 was \$54,000, while in 1959, the value had increased to \$186,000. Nevertheless, the total increase for all five cut flowers was an extremely moderate one. The value in 1958 being \$2,249,000, and in 1959, \$2,429,000.

The Hidden Problems in Floriculture Marketing

The market for flowers has increased in total on a per capita basis. Voigt (127), quoted Fossum's estimate of consumer expenditure for goods and services of floriculture as increasing 54 per cent from 1949 to 1959. Non-florist

outlets' sales rose 78 per cent, FTD orders increased 84 per cent and FTD values of orders increased 11.6 per cent. An increase of about 50 per cent occurred in U. S. florists' production, per capita disposable income, all retail trade and retail flower sales.

Despite what appeared to be a rather favorable trend, recent wholesale price and supply conditions indicated a need for further expansion of consumption. There were frequent periods when production greatly exceeded demand or sales [Liesveld (15)].

Problems involved hinge on certain factors which motivate the demand for flowers on the trade practices of retail florists. The existing markets for floricultural products may be grouped into four categories [Dewey (100)]. Three of the four categories that he grouped are "occasional" events.

1. Personal events

- a. Funerals
- b. Illnesses
- c. Births
- d. Weddings
- e. Home entertainment

2. Public events

- a. Church services
- b. Store openings
- c. Organization meetings
- d. Dances

3. Holidays

- a. Easter
- b. Christmas
- c. Mothers' Day
- d. Decoration Day
- e. Valentine Day
- f. Thanksgiving

4. Other demands

- a. Impulse sales
- b. Home decoration

When the demand is largely limited to flowers for special occasions, retail florists find themselves faced with a relatively inelastic demand. This demand has a "necessity" characteristic. The use of flowers on these occasions is dictated by long established social customs and is relatively independent of price. Much of the effective demand in the form of a "designed" product is for occasions rather than home use. Consequently, retail florists attempt to maximize profits by selling services along with flowers and by maintaining rather constant selling prices throughout the year.

Sales of flowers for everyday use, at present, probably account for less than 5 per cent of all flowers sold by retail florists [Trotter (118)]. The customer buying flowers for everyday use is not likely to be willing to pay for the services of designing, delivery, credit, etc., usually associated with retail florist sales.

There has been very little effort on the part of retail florists to satisfy the demand for low-priced flowers. It is also true that there is no established custom in this country calling for the use of flowers in the home. The development of this important potential market could materially increase sales of flowers and plants. It is important however that these sales be made at prices that will cover

present costs of production and marketing. An important phase of the present problem then has to do with adjusting marketing policies and orienting them to a new market which supposedly will yield expanded sales.

The effort to develop this new market needs a fresh approach to floral merchandising. Only in the light of the real product classification can an interested marketer make assumptions and learn lessons from the status quo.³

Research has shown that flowers for the home convey different images in consumers' minds as compared to their image involved in flowers for special events. This consequently will influence their behavior. It is probable that as flower sales for home decorations increase, more of the flowers that are purchased will be seen by the purchaser. Thus one would expect a new set of preferences to develop. The selection and preference of the retailer will become less of a factor and consumer preference will become more important.

There have been quite a number of marketing research problems studied by floricultural marketing researchers but only a few are oriented to the study of consumer preferences. Furthermore, there has been no concerted effort to synthesize these materials into a new meaningful condensed form.

³L. J. Tolle, Strategy Considerations in Changing the Retail Outlet for Floral Products, in mimeo.

Objectives

It is recognized that the likes and dislikes of the consumer, his opinions and prejudices, and the amount of money he has available are all important items in determining the merchandising methods to be used and the product to be offered.

In buying any product the consumer is confronted with the need for making decisions. These decisions are affected by color, style, degree and kind of packaging, prevailing prices and the extent to which other products may be substituted. The criteria for selecting the merchandise purchased by consumers might not always be controlled by the marketer, but they cannot be ignored for they function in the consumer's decision-making.

This study is primarily designed to investigate the physical attributes that stimulate consumer actions as they affect their preferences for the five major cut flowers: carnations, pom-pon chrysanthemums, standard chrysanthemums, gladiolus, and roses. The stimuli under investigation were color, size, price, quantity, and grade.

More specifically, this study was undertaken to determine:

- (1) Consumers' color preferences,
- (2) Consumers' unit-of-purchase preferences,

- (3) The influence of prices per unit on the consumers' preferences,
- (4) Consumers' preferences for grades and a correlation of these preferences to established grades, and
- (5) The influence of price on the grade preferences,
- (6) Relationship of consumers stated preferences to their marketing behavior (revealed from florists' survey).

CHAPTER II

REVIEW OF LITERATURE

The Function of the Consumer in a Free Choice Economy

Katona (10), made an analysis of the consumer latitude in this country. He reasoned that:

. . . Economies are conceivable in which consumer expenditures do depend solely on consumer income. Indeed, as of fifty or one hundred years ago in the United States, and even today in many countries, this may constitute a fair approximation of the actual situation. One may think of a poor economy in which most people devote all their income to subsistence. Whatever people earn they spend on food, shelter, and clothing in order barely to survive. In such a situation consumer discretion is absent. In feudal societies it is the landowning gentry, and in early industrial societies the few great entrepreneurs, who direct the economy. But in the United States today the role of the consumer is fundamentally different. Several major recent developments have substantially increased the power of American consumers by allowing them freedom to advance or delay their purchases and to spend whether above or below their current incomes.

Similarly Gordon (8), pointed out: "It (free choice) is the power to choose those goods and services they (consumers') want in an economy characterized by security and governed by a price system. . . . The counterpart of free choice is the concept of free conscious rejection."

In essence, Lazer, et. al. (13), commented that the business enterprise is governed largely by consumer sovereignty rather than by authoritarianism of either corporate management or the government. Acceptance of the viewpoint that, in fact, the consumer is king, implies an understanding of the freedom of consumer choice, and the voluntary action that underlines achievement of market goals.

This orientation is implied with Martineau's claim (63), that business is simply a means for the society to achieve its goals, not an end in itself. In a highly competitive free economy one must meet the consumer's taste for color, attractive design, convenience.

Gordon (8), suggested that the function of consumers in a free choice economy is to use their freedom of choice positively so as to generate the production of an abundance of wealth. Thus consumer welfare would be enhanced.

One may easily detect a much wanted implication for marketing strategy which derives from this system design. Since consumer satisfaction is so important to the marketing philosophy, the scientific study of the consumer is central to the development of marketing strategy. The fact-founded method of solving marketing problems is a cornerstone of the marketing management concept. Information about numerous marketing problems--up-to-date, information about consumers,

and consumer behavior, is pivotal to the effective mobilization of marketing resources.

Consumer Preference Research

Consumer Preference Research in Agriculture

Jasper (108) commented on the role of marketing research in the area of agriculture. For many years, agricultural research was concentrated primarily on improving and increasing the efficiency of agricultural production. Progress made in this field, in some instances, created surpluses which increased the need for improvement in marketing methods. This, in turn, has created a need for more information about consumer preferences, practices, and buying habits in order that marketing improvements might be developed on the basis of a more complete understanding of the problem.

Seeing the need for consumer preference studies on agricultural products, the Department of Agriculture has undertaken a great deal of research in this since the end of World War II. In 1950 Bayton (33) reported on consumer preference research in the Department of Agriculture. One of the major features of the present program of analysis of consumer preferences is its direction toward classes of products. Fundamental to this approach is the aim to obtain data that will be beneficial not only to one specific group,

such as retailers, but that can also be used by producers, processors, wholesalers, retailers, and consumers.

Another feature is the cooperative basis on which each project is developed. Involved in the planning of each study are specialists in the product area, as well as agricultural economists, home economists, marketing specialists, and psychologists. This permits each study to be designed in terms of the major dimensions that are important to it.

The above statement is a full account of the function of consumer preference investigations in the realm of agriculture marketing research. However, limited attention has been given to methodology.

Howell (55) outlined the methods already tried for obtaining information regarding consumers' preferences: (1) Consumers' preference surveys, designed to learn from consumers their preferences with respect to select products and factors affecting these preferences; (2) Consumer purchase survey's designed to assemble data relating to volume of purchases and expenditures for specific articles by individuals and by families to be used as a basis for indicating the response of volume of purchases and expenditures to individual incomes and to other factors; and (3) Retail sales surveys, designed to assemble data as to volume of sales, prices, and other factors for specific products which would show the response of volume of sales to prices and other factors.

In closing, an over-all evaluation of this research

on consumer preferences should be brought into light. Bayton (33) generalized his report on "Consumer Preference Research in the Department of Agriculture" thus:

This research on consumer preferences indicates that from the viewpoint of action-research the results of such studies are of value--to Government administrators and the private interests involved (consumers, retailers, wholesalers, and growers).

. . . The integration of the findings into systematic economics of demand-analysis appears to rest, however, on somewhat tenuous grounds. Whereas these studies contribute to our knowledge of consumers with respect to product-classes (citrus fruits, potatoes, men's clothing etc.) We still need to develop a systematic conception of the principles involved in the behavior of consumers, which includes the psychological and sociological variables that are most certainly operative in influencing the behavior of consumers, irrespective of product-class.

Consumer Preferences for Flowers

There have been quite a number of marketing research problems studied by floricultural marketing researchers, yet only a few are oriented to the study of consumer preferences. Since they are so few, an effort will be made here to present a general outline of each contributing work.

Sherman, et. al. (115) conducted a study of consumer preferences for roses, carnations, and chrysanthemums. The study used a consumer panel, representative of the population of Columbus, Ohio. The purpose of that project was to find out consumer preferences for roses as related to carnations

and chrysanthemums. The results were presented under the following headings: preferences for flower types, color preference, and frequency of purchase. A similar study was undertaken by LeClerg (112), Mississippi Agricultural Experiment Station. These two investigations were done with cut flowers (Sherman's study only included cut flowers; LeClerg's study included both cut flowers and pot plants). Therefore, they proved to be the most useful reference for this study. The details of these findings are distributed throughout this paper under appropriate headings.

Early (102) of Pennsylvania State University has also done important work in this area. A personal interview type of survey was conducted to study consumer flower-buying practices. The city of York, Pennsylvania was selected because of its diversity of occupations, incomes, nationalities, and religions. The sample yielded 1,053 completed and acceptable schedules which were collected from October 1954 to February 1955. Since consumer concepts of a product will influence its use, a part of that paper was devoted to the description of the image of floral products and the image of their plan of sales. Four areas were related to help compose the consumers' image of floral products. The four areas were: (1) values and attitudes toward floral gifts; (2) preference for floral products; (3) influence of selected retail

florists' sales techniques; and (4) price concept of floral products.

Concerning the second area of the presentation, the author pointed out several factors which effect the preference pattern over the floral products for different uses. These were variables within the sampled consumers themselves, such as: sex, marriage status, age etc.

In light of the above findings certain implications and recommendations were made for future merchandising efforts.

Sorensen (117) conducted a study designed to obtain information on consumer buying habits; the use and preference of plants and flowers for the home and the possibility of changing and developing consumer buying habits. It was assumed that the demand for floral products may increase if these habits could be changed or developed. The hypothesis was that the large undeveloped market potential for plants and flowers in the home could be developed further. To test this hypothesis, a consumer panel was conducted in College Station and Bryan. A three-part objective of that study was to find out where, when and how often the panel members bought flowers or plants for home use. The revealed consumers' preference indicated that the hypothesis was a sound one. Certain preferences should be considered by the retail florist in developing the market for flowers in the home. They were:

The flowers should not be arranged (according to 60 per cent of the panel),

There should be a large variety,

Care instructions should be included,

Merchandise should be priced plainly,

Medium-sized potted plants were preferred.

The second highlight of Sorensen's finding concerned the factors affecting purchases for the home. Among the items deserving most attention are: price, inadequate knowledge about certain plants and flowers, availability throughout the season, keeping quality, care required and appearance.

Consumer Panel as a Marketing Tool

A panel is defined as a group of consumers organized to serve with some continuity in an advisory, judiciary or fact-finding capacity. Panels vary in accordance with research objectives and thus may be quite different in individual conception and operation. Data are obtained by mail, personal interviews or consumer group meetings. There are essentially two types of consumer panels: the product opinion and attitude panel, and the consumer purchase panel. In some cases features of both are combined in a single panel.

Shaffer (124) made an extensive study on the operation of consumer panels. In that paper, he gave a good description of the two types of consumer panels mentioned

above. Here only the 'product opinion and attitude panel' is considered.

The general purpose of the product opinion and attitude panel is to determine consumers' reactions, attitudes, preferences, and opinions concerning specific products. The types of studies made with each class of panel may be divided into two general categories; (1) those dealing with new and undeveloped (in a market sense) products, and (2) those dealing with products and services already on the market. The former is often referred to as a product-testing panel. The second type of study places more emphasis on what the consumer does. The information obtained is used for programs promoting the sale of the product. By determining what the consumer likes and dislikes about certain products the producer is guided in his plans to provide the market with the things the consumer wants most. The preferences can be identified with the different groups within the market, so as to determine the direction of the promotional programs. At the same time, the types of retail outlets through which the products should move can be determined to improve the distribution system for the particular product.

From the earlier review of literature on consumer preferences of flowers, it was rather interesting to note that the consumer panel is a prominent marketing tool in that

field of study. This is true even in other fields of study where consumer preference research is important. One writer commented on the role of consumer panels played in marketing research in the November 1945 issue of Printers' Ink Magazine: "The consumer panel is a unique market research tool. Provided the sponsor knows how to operate successfully and interpret results accurately, it points the way for a decision before he makes heavy commitments in production, distribution and advertising. It is the best instrument devised to date whereby he can consistently penetrate the mind of Mrs. Consumer and discover her definite views on a host of subjects affecting product acceptance or merchandising."

Even though the researcher may be aware of the significance of the consumer panel in product research, yet he may not be aware of some of the pitfalls of its use. No wonder Carroll¹ called to the attention of workers on consumer testing studies two important aspects of the problem which appeared to have been overlooked. They were the need for greater flexibility in planning consumer tests and the opportunity for more efficient use of consumer test data. Indeed, those two aspects can never be overestimated in this type of research. Owing to the variations in the sample size demand--

¹Mavis B. Carroll, "Consumer Product Testing Statistics," in Arthur D. Little, Inc., Flavor Research and Food Acceptance, (New York: Reinhold Publishing Corp., 1958), pp. 162-174.

the number of products given to evaluate, and the extent of information required from the individual, flexibility is a prime requisite in planning a test. Only by securing a more efficient use of consumer test data, can more adequate and dependable information be obtained.

In concluding, one may safely claim that regardless of the recognition accorded panels as a unique market research tool, it can be stated definitely that they provide the key that opens the door to the solution of many problems confronting manufacturer (or producer), distributor, and media.

CHAPTER III

METHODOLOGY --- CONSUMER PREFERENCE STUDY

Materials

Five major cut flowers were selected for this study, namely: carnations, pom-pom chrysanthemums, standard chrysanthemums, gladiolus, and roses.

In nearly all cases, flowers were obtained from the Lansing Florist Exchange, a wholesale florist in Lansing, Michigan. The flowers were delivered to the laboratory of the Horticulture Department at Michigan State University, on the morning of the appointed testing day.

Flowers were then inspected by the researcher. Since the investigations were held in the city of Detroit the flowers were packed as carefully as possible to prevent damage. They were then transported to Detroit by private car. Although they were not refrigerated en route, no keeping quality problems were encountered since the panels were held during the comparative cool seasons of the year.

The flower exhibitions were prepared in the laboratory of the Home Economics Department, of Wayne State University. The flowers were placed in white cardboard

ice-cream containers ($\frac{1}{2}$ gal. size). A simple but uniform arrangement was then designed characteristic of the exhibitions throughout the experiments. A strong effort was made to minimize undesirable bias-inducing elements and at the same time to provide for all factors other than those being tested to be equal. Likewise, care was taken to insure that samples from each of the treatments would be carefully selected to avoid blemishes, variance of shape or state of openness which might unduly bias the panel members.

A detailed description of the flower exhibitions for each experiment is provided under the subject of 'scope of the study'.

Methods

The panel and statistical methods will be described here as they were common to all tests.

The Panel

The Michigan Consumer Preference Panel was initiated in 1956 to establish consumer preferences relative to grades, varieties, sizes, color, and processing techniques for agricultural products. It is under the direction of Dr. H. E. Larzelere, department of Agricultural Economics, Michigan State University. The panel met three to five times a year. The testing materials have been provided by several cooperating departments. Among them are Poultry,

Science, Animal Husbandry, Dairy, Farm Crops, Food Science, and Horticulture--all of Michigan State University and by the Home Economics Department of Wayne State University. Occasionally a commercial firm has also participated. The horticulture department has participated in this project, since 1957.

For the sake of convenience in discussion, the following presentation is subdivided into three parts, namely: (1) Selection of the panel members, (2) justification of the sampling method, and (3) panel procedure.

(1) Selection of the panel members: Mail questionnaires were sent to people selected at random obtained from the latest Detroit telephone directory. About 5 per cent of these were returned by the post office for nondelivery. About 20 per cent of the remainder were filled out and returned either from the first or from a second questionnaire.

The basic questions called for information regarding age, education, income, and willingness to come to a display room in Detroit to rate samples of the different products displayed (Appendix 1). A majority of those selected for the panel were in the middle income group (\$4,000-10,000). They had obtained 12 - 13 years formal education, and were in the 31 to 45 year age bracket.

Those who returned questionnaires (they were in the above age, education and income groups) and who were willing

to take part in the panel were contacted by telephone to schedule their visits, and to inform them of the method of remuneration (\$4.00 per visit to each panelist to cover the costs of parking, babysitters, meals that they might have to eat away from home and gasoline or bus fare).

(2) Justification of Samplings: This panel was selected as a sample of a major group of inhabitants of Detroit, Michigan. On the basis of census information it was estimated that the age, education, income, of the groups selected resulted in a panel representing about half the consumer purchasing power in that city. Constant effort is expended toward periodically modifying the panel to maintain it as a reasonable index of typical consumer behavior.

A special report on the social profile of Detroit (1955) by the Survey Research Center of the University of Michigan (87) together with the census information confirmed the model group used in this study.

Although the technique of the selection was justified, the justification for choosing the city of Detroit against other places in the State for this particular study, must be considered.

Von Oppenfeld (85), studied the retail distribution of floricultural crops in Michigan. His findings revealed 70 per cent of the floriculture trade was concentrated in

seven metropolitan markets in which 64 per cent of Michigan's population resided. Almost half of all retail florist sales were made to consumers in metropolitan Detroit.

Although his report was based on research done in 1954, periodic studies of official reports (Census of Agriculture, special Reports, Horticultural Specialties) indicates that this pattern has remained unchanged. On this ground, using the city of Detroit as the sampling area was amply justified, since it was necessary for this study to be in one geographic area.

(3) Panel procedure: Panel meetings were conducted from two o'clock in the afternoon until ten o'clock in the evening. Approximately 125 members attended each panel session with 20 going through at half hour intervals. After a briefing on the general purpose of the project, panel members were asked to rank the samples in each series independently of the other series. Except where indicated otherwise, the ranking was based on the order in which the panel member would select the various samples if they were buying them, regardless of price (in the afternoon sessions). Price-tags were attached in the evening when the tests were based on price. When an individual consumer completed his ranking of the products, his forms were checked to make sure that he ranked all the products within each series.

Symbols were used to link the actual samples with the ranking on the panel report card so that numerical or alphabetical order would not influence selection. The symbols were alternated so that a particular figure would not continually indicate a certain quality. The position of the products on display were also varied in order that the highest quality was not placed in a standard position. The symbols used were #, %, &, *, (), and +.

As pointed out, in each of the tests, the panel members were asked to rank the samples in order of their preferences. They could show equal preference to two or more of the samples in each series. In some cases they were asked to answer a short questionnaire which was designed to give some complementary information, e.g. frequency and purpose of purchasing flowers, et cetera.

Statistical Analysis

In the consumer panels, each individual consumer ranked the samples tested in order of preference, from one to three, four, five or six, and these data were summarized. Since it is difficult to make comparisons from the rankings (revealed by the panelists) directly for overall preferences, the following five statistical tools were used for each panel test:

- (1) a coefficient of concordance, W ,
- (2) Kendall's Z -test,
- (3) estimated ranking,
- (4) per cent first preference choice,
- (5) distribution of preferences within categories
(samples) of the variable-class test.

The coefficient concordance, W , ranges from zero or no agreement in preferences among consumers, to 1 or complete agreement [Kendall (12)].

Kendall's Z -test is used to test the significance of an observed W value. That is to say to determine whether the differences in preferences are real or whether they could have been due to chance alone. The hypothesis stated that observers have no community of preference for each test based on the significance of an observed value of " W ". A 1 per cent risk was chosen in each single conclusion for all the tests. When the observed value is greater than those of S at probability level of 1 per cent, the hypothesis hence is rejected, i.e., there is community of preference. And an estimated ranking is set up for the test.

Kendall (12), recommended ranking according to the sums of ranks allotted to the individuals. The one having the lowest total should be ranked first; next lowest, second, and so on. This procedure gives a "best" estimate in a

certain sense associated with least squares. In fact, the sum of squares of differences between what the totals are and what they would be if all rankings were alike is a minimum when the ranking is estimated by this method.

A generalization based on preference-intensity for a certain color sample was projected from the estimated rankings. The following terms were used for this purpose to help denote the relative position on a preference-intensity scale; high, high-medium, medium, medium-low, and low (in a descending order).

The per cent of first preference choice is a method by which to select the one most popular product. In other words, one of several alternative categories is selected, and the most popular product is then called "the preferred" product.

The distribution of preferences within the category of the variation-class test indicates the order of choice within a class and the proportion of the population that may have a distinct aversion to the category of merchandise presented.

In addition, in the number preference study for roses one more test is employed--the preference index. It is obtained by weighting first place votes higher than second place votes, second place higher than third, etc. These adjusted percentages are added to give a single preference score for

that category (sample). The highest score in each series indicates the sample that is preferred by the largest number of panel members. The amount of difference between the scores shows the degree of preference for samples.

An arithmetic mean was used in the three following analyses to describe the entire set of data (i.e. the combined analysis of tests): (1) per cent in first preference choice, (2) distribution of preferences within sample classes, (3) preference index (roses--number preference study only).

Because not all of the samples were present in each test of that variety of experiment due to technical limitations, a proper approximation is needed in order to combine a set of data, e.g., in the study of "percentage of 1st choice of X sample" and "distribution of frequency of Y sample". The philosophy of this readjustment is to convert the base percentage of all tests to a same "footing-place"--as if all the concerned samples of that variable test were presented. Hence the figures appearing in the two mentioned studies were not the originals, but rather the "modified figures". An arithmetic mean, therefore, was derived from those modified (adjusted) figures to describe the location of a set of data without causing a distortion to the origins.

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All of the tests mentioned here denote in varying degrees the selection of the one most popular product. This is considered to be the theme of this presentation.

Scope of the Study

Studies of consumer preferences as previously pointed out mainly provide a means of seeking appropriate stimuli to consumer behavior. This philosophy has been underlined throughout the study. A detailed outline is shown below:

<u>Type of flowers</u>	<u>Variable</u>	<u>Categories</u>	<u>Other feature</u>
Carnations	color preferences	white, red, dark pink, pink, variegated yellow	day-light vs. fluorescent
	number preferences	3 flowers	price vs. non-price
		4 "	
		5 "	
		6 "	
		8 "	
		12 "	
Pom-pon Chrysanthemums	color preferences	white, dark bronze, bronze, pale bronze, yellow, light lavender, lavender	day-light vs. fluorescent light
	number preferences (10" bunch) in diameter	1 bunch 2 bunches 3 bunches	price vs. non-price
	grade preferences (size of a bunch)	6"/bu. 8"/bu. 10"/bu. 12"/bu. 15"/bu.	price vs. non-price

<u>Type of flowers</u>	<u>Variable</u>	<u>Categories</u>	<u>Other feature</u>
Standard Chrysanthemums	color preferences	white, pink, bronze, yellow, lavender,	day-light vs. fluorescent light
		3 flowers	price vs. non-price
		4 "	
		5 "	
		6 "	
		8 "	
		12 "	
Gladiolus	color preferences	white, red, pink, variegated yellow	Day-light vs. fluorescent light
		3 flowers	price vs. non-price
		4 "	
		5 "	
		6 "	
		8 "	
		12 "	
Roses	color preferences	white dark red, red pink, yellow, pale lavender	day light vs. fluorescence light
		9"--	price vs. non-price
		3 flowers	
		5 "	
		7 "	
		9 "	
		12 "	
		12"--	price vs. non-price
		same as 9"	
		15"--	
		same as 9"	
	grade preferences (length of the stem)	9"	price vs. non-price
		12"	
		15"	
		21"	

CHAPTER IV

RESULTS OF THE CONSUMER PANEL STUDY

Rodes (56), referred to a two-fold objective in preference studies. Much of the literature on preference studies is rather confusing, he commented, until it is realized that there has been a difference in objectives among the studies, though the difference does not appear to have been explicitly mentioned.

Many preference studies have as their objectives the selection of one of the several alternative products as the product to be merchandised to a certain customer population. Some other preference studies are concerned with merchandising two or more products simultaneously.

In this study, analysis emphasized the one most popular product.

The detailed description of the analyzing methods used have been discussed in Chapter III--Methodology.

Tables presented in this chapter were purposely kept in two separate categories: Case 1--afternoon session and Case 2--evening session. This division was caused by either a change of one element in the environmental condition having

taken place, e.g., lighting system: or because a new feature was introduced to the study, e.g., price-tags. The presentations were designed only to serve as a general reference and further comparisons are extended in Chapter VI.

Since the greater concern is on the basis of each type of selected cut flower, the main body of this report will be divided into five parts according to the five types of selected flowers. The presentation of the data obtained for each of the five flowers is submitted in the following order: carnations, pom-pom chrysanthemums, standard chrysanthemums, gladiolus, and roses.

Carnations

Two major investigations were conducted for this flower: (1) color preference and (2) number preference (unit-of-purchase). The former one had six replicates overlapping a range of five years--1957 to 1962, whereas the latter one had two replicates all performed in the year of 1962.

Color Preference

Six colors were chosen for this investigation: white, red, dark pink, pink, variegated (red and white) and yellow. These are considered to be the prominent colors in carnations. Samples consisted of units of five.

The scheme of this investigation follows:

<u>Date of Test</u>	<u>Testing samples (color categories)</u>
October 1957	red, dark pink, light pink, white
November 1957	red, dark pink, light pink, white, variegated
December 1957	red, dark pink, light pink, white
May 1961	red, light pink, white, variegated
February 1962	red, dark pink, variegated
November 1962	red, dark pink, light pink, white, variegated, yellow

Table 1 summarizes the rankings of the six tests.

Table 2 indicates the percentage of 1st-choice selections for the six color samples and the distribution of frequency of choices for each color sample.

A graphic presentation abstracted from Table 2 is designed to provide a closer look at the data by comparing the average percentage of the 1st choice of each color sample with the expected average (Fig. 1). There were only four colors with above average-preference (16.7 per cent): dark pink, variegated, white, and yellow (tested once). There was no material difference in the three preferred colors.

An interesting and quite notable change in first preference occurred in red carnations between the tests of 1957 and the two tests of 1961 and one test in 1962. The 1957 tests showed high preference for red carnations. The more recent tests showed a low preference for red. Whether it was due to "seasonal variation" or a combination of influences is unknown.

Table 1.--Consumer color preference in Carnationa: estimated rankings.+

Date of Experiment	Estimated Ranking					Total number of consumer	Coefficient of concordance W
	1st	2nd	3rd	4th	5th	6th	
Oct. 1957							
Case 1	Dark Pink	Red	Light Pink	White		51	*.1294
Case 2	Dark Pink	Light Pink	Red	White		68	*.0785
Nov. 1957							
Case 1						54	.1294
Case 2	Red	Dark Pink	White	Light Pink	Novelty	70	*.1576
Dec. 1957							
Case 1	Dark Pink	Red	White	Light Pink		48	*.2602
Case 2	Red	Dark Pink	White	Light Pink		80	*.2732
May 1961							
Case 1	Variegated	Light Pink	White	Red		85	*.2058
Case 2	White	Variegated	Light Pink	Red		100	*.2278

Feb. 1962

Case 1

Varie-
gated Dark
Pink Red

62

*.1059

Case 2

Varie-
gated Dark
Pink Red

85

*.1127

Nov. 1962

Case 1

Dark Varie-
Pink gated
Yellow White Light
Pink

69

*.5348

Case 2

Dark Varie-
Pink gated
Yellow White Light
Pink

101

*.2973

*

Sig. at 1% level

Case 1: afternoon session--day light
Case 2: evening session--WWX lighting

⁺ See p. 28 , Kendall1 (12), 1955. One having the lowest total (sum of ranks) was ranked first; next lowest, second, and so on.

The findings of the two cases showed:

dark pink--was consistently high in preference

"variegated"--ran high-medium to high in preference (except Case 2 of Nov. 1957)

Yellow (tested once)--was high-medium in preference

red--ranked high-medium in preference in 1957 tests and low in preference in 1961, 1962 tests

white and light pink--ranked medium low in preference

Table 2.--Consumer color preference in carnations: per cent of panel selecting sample as 1st-choice and the distribution of frequency of choices with a sample.

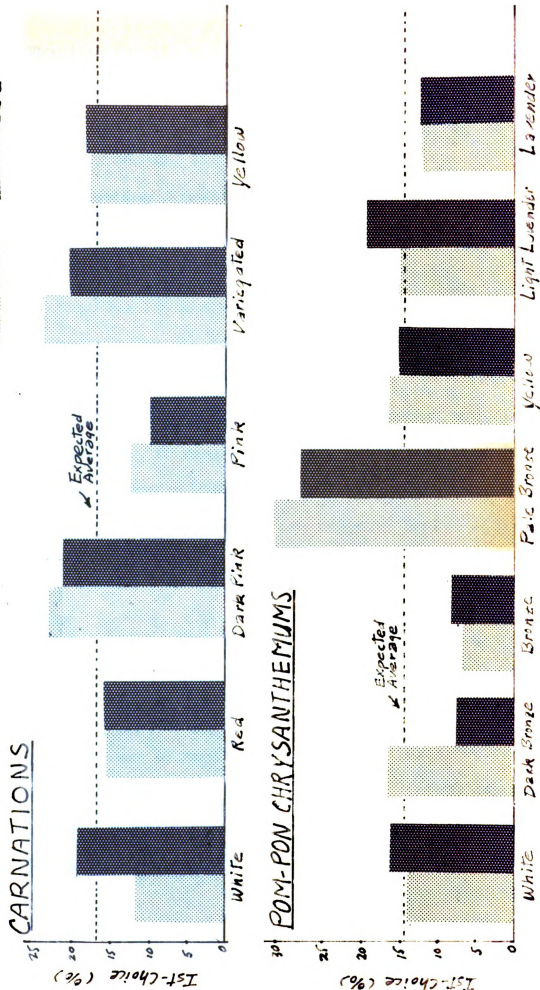
Color Samples	Case 1						Case 2							
	B. Distribution ^D of Preference						D. Distribution ^D of Preference							
	A. 1st-choice	1st	2nd	3rd	4th	5th	6th	C. 1st-choice	1st	2nd	3rd	4th	5th	6th
	($\bar{x}$)per cent	($\bar{x}$) per cent						($\bar{x}$)per cent	($\bar{x}$) per cent					
White	11.4	12.1	19.5	17.8	16.7	18.8	15.1	19.0	20.2	19.3	14.5	14.2	16.2	15.7
Red	15.2	15.8	13.8	15.6	19.0	16.8	19.5	15.3	16.0	15.8	16.3	21.5	16.0	18.3
Dark Pink	23.0	24.4	19.6	15.7	11.3	14.1	14.9	20.7	21.6	20.8	17.7	10.6	15.0	14.7
Pink	11.8	12.8	15.1	22.1	19.1	15.6	15.4	9.5	12.3	18.3	18.0	22.5	17.4	16.5
Variegated	23.9	26.7	17.2	8.7	14.9	16.7	16.7	20.2	21.8	12.5	15.2	17.2	16.6	17.8
Yellow	17.5	20.3	18.8	20.3	15.9	14.5	10.1	18.4	19.8	18.8	27.7	9.9	11.9	11.9

Case 1: afternoon session in day-light.

Case 2: evening session with WWX lighting (warm white Deluxe Fluorescence light).

Because of tie-preferences, the percentages of 1st-choice shown in A and C for a certain sample will not equal their corresponding percentage of 1st-rank in B and D.

Fig. 1 The Comparison of The Average Percentage of the 1st-Choice for Each Color Sample with the Expected Average Percentages:



The distribution of frequency of choices of these six color samples did not give a clue to any new findings other than the facts related above.

Sherman, et. al. (115) recommended a "write-in" technique for testing flower color preferences--which was not associated with the particular samples of flowers. Hence, the answers would be influenced in no way. Le Clerg (112) adopted this method for his survey in 1958. This research method was contrary to the method employed here in this study (appearance of actual flowers). Therefore an experiment was conducted in February 1963 using the "write-in" method to test whether the two research methods would lead to different results. Part of the results of that panel along with Sherman's and Le Clerg's findings are reported here:

	Red	Yellow	Pink	White	Mixed	Other	No Pref- erence
Sherman	46.4	.9	8.9	12.5	10.7	4.5	16.1
Le Clerg	38.4	2.1	31.9	19.1	2.8	0.4	5.3
Write-in	17.8	5.3	16.4	16.4	4.0	15.8	8.6
panel			(dark)			(variegated)	
			15.8				
			(light)				

Apparently there was no agreement between the three "write-in" experiments. Yet there was great similarity between the February "write-in" panel and the regular "visual" panel of this study--where the products were seen (c.f., Fig. 1).

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In short, the above analysis revealed that there was no significantly "preferred" color in carnations. Panel members however did show relatively higher preferences for dark pink and variegated (red and white) over other colors (Table 2).

Number Preference

Six "units-of-purchase" categories were chosen for this investigation: each sample consisted of 3, 4, 5, 6, 8, or 12 flowers. Emphasis was stressed on the small units. Popular comment indicates that the demand for cut flowers is different from the present 'designed' floral products consisting of large units. Dark pink carnations were used.

The scheme of this investigation was:

Date of Test	Testing Samples (unit categories)	Special Feature (in case 2)
May 1959	5, 8, and 12	
February 1963	3, 4, 5, 6, 8, and 12	30¢ each 60¢ each (in doz.)

Table 3 summarizes the results of the two tests in rankings. The results showed no significant price-effect on the unit-of-purchase. The units of three had low preference in both cases, whereas the units of five and eight showed high preference in the two cases.

Table 3.--Consumer number preference⁺ of Carnations:
estimated rankings.

Date of Experiment	Estimated Ranking						Total number of consumer	Coefficient of concord- ance W
	1st	2nd	3rd	4th	5th	6th		
May 1959								
Case 1							48	.0013
Case 2	5	8	12				82	*.3532
February 1963								
Case 1	8	5	6	12	4	3	63	*.3787
Case 2	8	5	6	4	12	3	86	*.3532

* Significant at 1% level

⁺ Numbers indicate numbers of flowers in a unit

Case 1: afternoon session (not priced)

Case 2: evening session (priced)

In Table 4 is presented the analysis of the percentage of 1st choice of the six unit samples and the distribution of frequency of choices for each unit sample. No attempt was made to draw a further conclusion on the 1st-choice analysis, since it was considered with only one replicate. Furthermore, an erroneous price-tag appeared on the units of twelve.

However, the study of the "distribution of frequency of choices within a sample" indicated:

units of 3 and 4 were predominantly in the low ranks preference in both cases,

Table 4.--Consumer number preference in Carnations: per cent of panel selecting sample as 1st choice and the distribution of frequency of choices within a sample.

Unit Samples	Case 1						Case 2					
	Distribution of Preference						Distribution of Preference					
	1st Choice	1st	2nd	3rd	4th	5th 6th	1st Choice	1st	2nd	3rd	4th	5th 6th
3	1.4	1.6	3.2	3.2	14.8	15.9 61.9	2.3	2.3	0.0	5.8	14.0	31.4 46.5
4	4.3	4.8	9.5	17.5	15.9	47.6 4.1	9.3	9.3	12.8	17.4	25.6	19.8 15.1
5	18.1	18.9	16.4	25.6	19.4	16.5 8.4	26.4	26.4	17.5	18.2	17.7	10.1 10.1
6	14.3	15.9	20.6	23.8	25.4	9.5 4.8	11.6	11.6	34.9	30.2	12.8	8.1 2.3
8	28.0	30.7	27.0	10.2	14.7	14.2 8.4	27.4	27.4	25.6	9.1	16.5	12.4 9.0
dozen	19.0	19.9	13.4	16.2	13.1	18.7 18.7	9.5	9.5	6.2	20.2	13.2	21.7 28.5

Case 1: afternoon session (not priced)

Case 2: evening session (priced)

units of 5 and 6 were predominantly in the high-medium to medium ranks. This was more evident in Case 2,
 units of 8 were predominantly in the high ranks in both cases,
 unit of a dozen showed two modal preferences, one in high the other in low.

Therefore within the scope of this study, the unit of eight was preferred by more panel members than the other five units.

Pom-pon Chrysanthemums

Three major investigations were conducted for this flower: color preference, number preference (unit-of-purchase), and grade preference (diameter of the bunch). The next few paragraphs are devoted to the discussion of these three studies, respectively.

Color Preference

Seven colors were chosen for this investigation, namely: white, dark bronze, bronze, pale bronze, yellow, light lavender, and lavender. These are considered to be the prominent colors in pom-pons. The samples (each bunch) were 10" in diameter.

The scheme of this investigation was:

Date of Test	Testing Samples (color categories)
October 1957	white, yellow, bronze, pale bronze, light lavender
November 1957	white, yellow, bronze, dark bronze, lavender
December 1957	white, bronze, dark bronze, lavender
February 1962	white, light lavender

November 1962 white, yellow, dark bronze, pale bronze,
lavender, light lavender

Table 5 summarizes the results of the five tests in rankings.

The findings in the two cases showed:

Light lavender ran high-medium to high in preference
Pale bronze was high-medium in preference
White ran medium-low to high in preference
Bronze ran medium to low in preference
Dark bronze ran low, except the Nov. 1957 test (case 2)
Lavender varied in the extremes
Yellow varied through the preference scale

Table 6 shows a study of the percentage of panelists who assigned 1st choice to each of the seven color samples and the distribution of frequency of choices for each color sample.

A graphic presentation abstracted from Table 6 is submitted in Fig. 1. It is designed to provide a closer look at the data by comparing the average percentage of the first choice of each color sample with the expected average.

There were four colors with the above average preference (14.3 per cent). In Case 1 (afternoon sessions), they were pale bronze, dark bronze, yellow, and light lavender, but in Case 2 (evening sessions) they were pale bronze, light lavender, white, and yellow. However, panel members showed a higher preference for pale bronze than for the other preferred colors in both cases. Furthermore, high frequency of

Table 5.--Consumer color preference in pom-poms: estimated rankings.

Date of Experiment	Estimated Ranking						Total number of consumer	Coefficient of concordance W
	1st	2nd	3rd	4th	5th	6th		
October 1957	Light	Pale						
Case 1	Lavender	Bronze	Yellow	White	Bronze		51	*.1779
Case 2	Light	Pale						
	Lavender	Bronze	Yellow	White	Bronze		68	*.1192
November 1957	Dark							
Case 1	Bronze	White	Bronze	Lavender	Yellow		54	*.0921
Case 2	White	Bronze	Lavender	Dark	Yellow		70	*.1471
December 1957								
Case 1	Lavender	White	Dark	Bronze			48	*.1918
Case 2	Lavender	White	Dark	Bronze			80	*.1183
February 1962								
Case 1							62	*.0073
Case 2	White	Light					85	*.0779
		Lavender						
November 1962								
Case 1	Yellow	Light	Pale	White	Lavender	Dark	69	*.2609
Case 2	Yellow	Lavender	Bronze	White	Dark	Bronze	101	*.2811

*Significant at 1% level

Case 1: afternoon session (in day light)

Case 2: evening session (using WWX lighting)

Table 6.--Consumer color preference in pom-pom Chrysanthemums: per cent of panel members selecting sample as 1st-choice and distribution of frequency of choices within a sample.

Color Samples	First choice	(Case 1)							(Case 2)							
		Distribution of Preference							First choice	Distribution of Preference						
		1st	2nd	3rd	4th	5th	6th	7th		1st	2nd	3rd	4th	5th	6th	7th
	($\bar{x}$) per cent	($\bar{x}$) per cent							($\bar{x}$) per cent	($\bar{x}$) per cent						
White	13.6	14.2	14.1	14.8	15.4	13.9	12.5	14.1	16.1	16.6	14.8	14.2	15.6	12.5	12.7	14.1
Dark Bronze	16.4	16.8	12.2	21.2	10.9	10.6	14.0	14.0	7.5	7.8	15.7	25.2	13.1	8.8	14.0	14.0
Bronze	6.4	6.6	13.3	10.0	18.8	16.8	19.9	14.0	7.0	7.3	10.4	12.4	17.4	17.7	18.9	14.0
Pale Bronze	31.2	35.7	7.4	11.1	11.2	15.0	1.2	14.0	27.4	28.0	9.9	13.4	10.9	15.0	2.6	14.0
Yellow	15.9	16.9	19.7	13.5	12.0	13.1	10.2	14.0	14.7	15.1	16.0	14.0	14.4	21.6	10.2	14.0
Light Lavender	14.8	16.0	21.9	19.4	10.7	4.0	5.0	14.0	19.2	19.7	20.4	16.5	7.2	8.6	2.6	14.0
Lavender	11.7	11.9	13.7	16.0	10.3	16.1	17.3	14.1	12.1	12.4	14.8	10.3	12.6	14.4	21.4	14.1

Case 1: afternoon session (in day light)

Case 2: evening session (using WWX lighting)

preference for pale bronze was found in the first preference-- 37.7 per cent (in case 1) and 25.5 per cent (in case 2) as compared to the next 6 lower ranks (c.f. Table 6).

A "write-in" panel for color preference in pom-pons was conducted in February 1963. The results of that panel were quite different from the "visual" panels. The results of the "write-in" panel showed the following preferences: yellow was preferred by 26 per cent of the panel members, no color preference by 19 per cent, white by 17 per cent, dark bronze by 10 per cent, bronze by 10 per cent, pale bronze by 7 per cent, mixed by 4 per cent, dark lavender by 3 per cent, pink by 3 per cent, and lavender by 2 per cent.

The inconsistency in these two methods of testing may have arisen because of the inaccurate color concepts possessed by the consumers especially with the colors 'lavender' and 'bronze'. The panelists may also have been hindered by their limited knowledge on the distinction between pom-pons and standard chrysanthemums.

When the preference scores of the three levels of color saturation in bronze were combined, this figure indicated 26 per cent preferred the color of bronze. This may help to interpret the deviation between the two findings.

Conclusion: consumers were not color conscious in selecting pom-pons. Whether this was due to limited knowledge

about the product was not known. Pale bronze was more popular than the other six colors (see Table 6).

Number Preference

Three units-of-purchase were chosen for this investigation: 1 bunch, 2 bunches, and 3 bunches. The size of the bunch was 10" in diameter and the color was white.

The scheme of this investigation was:

Date of Test	Testing Samples (unit-of-purchase)	Special Feature (in case 2)
February 1963	1, 2, 3 bunches	\$3.79 per bunch

The results of the findings were analyzed in ranking and preference distributions within a sample and among samples (Table 7).

Although this study was conducted only once, the results indicated significantly the preference for three bunches when no price was placed on the samples. The price-mechanism reversed the results from a high preference for the three bunch units to the high preference for a one bunch unit (Table 7).

Grade Preference

The grading system was determined by the size of the bunch. Five sizes were used for this study: bunches 6", 8", 10", 12", and 15" (in diameter). Samples were in lavender in both tests.

Table 7.--Consumer number preference in pom-pom Chrysanthemums.

Estimated Ranking				
Date of Experiment	Estimated Ranking			Coefficient of concordance W
	1st	2nd	3rd	
February 1963				
Case 1	3 bunches	1 bunch	2 bunches	*.1548
Case 2	1 bunch	2 bunches	3 bunches	*.2342

* Significant at 1% level

Distribution of Preference									
Unit Samples	Case 1					Case 2			
	Distribution of Preference					Distribution of Preference			
	1st-choice	1st	2nd	3rd	per cent	1st-choice	1st	2nd	3rd
1 bunch	30.8	31.7	22.2	46.0	66.3	66.3	66.3	17.4	16.3
2 bunches	16.9	17.5	39.7	42.9	18.6	19.0	65.5	15.5	15.5
3 bunches	52.3	54.0	39.7	6.3	15.1	15.5	16.7	67.9	67.9

Case 1: afternoon session (not priced)

Case 2: evening session (priced)

The scheme of this investigation was:

Date of Test	Testing Samples (size of the bunch)
February 1962	6" (\$2.15), 8" (\$2.75), 10" (\$3.50), 12" (\$4.25)
February 1963	6" (\$2.29), 8" (\$2.99), 10" (\$3.79), 12" (\$4.49), 15" (\$5.59)

Table 8 summarizes the results of the two tests.

Table 8.--Consumer grade preferences of pom-poms: estimated rankings.

Date of Experiment	Estimated Ranking					Total number of consumers	Coefficient of concord- ance W
	1st	2nd	3rd	4th	5th		
February 1962							
Case 1	8"	12"	10"	6"		62	*.5539
Case 2	10"	8"	12"	6"		85	*.2480
February 1963							
Case 1	15"	10"	12"	6"	8"	63	*.3864
Case 2	10"	12"	8"	15"	6"	86	*.1008

Case 1: afternoon session (not priced)

Case 2: evening session (priced)

The finding showed:

6" was low in preference in both cases,
 8" varied in preference in case 1 and was medium in
 preference in case 2,
 10" moved from high-medium in preference in case 1 to
 high in case 2,
 12" ran medium in preference in two cases
 15" was high in case 1 yet low in case 2

Table 9 presents a study of the per cent of the five
 grade samples scoring 1st-choice and the distribution of
 frequency of choices for each grade sample.

Table 9.---Consumer grade preference of pom-pon Chrysanthemums: Per cent of panel selecting samples as 1st-choice and the distribution of frequency of choices within a sample.

Grade Samples	Case 1					Case 2						
	1st Choice	Distribution of Preference				1st Choice	Distribution of Preference					
		1st	2nd	3rd	4th		5th	1st	2nd	3rd	4th	5th
	$\bar{(x)}$ %	$\bar{(x)}$ per cent					$\bar{(x)}$ %	$\bar{(x)}$ per cent				
6" in diameter	6.0	6.4	8.9	13.3	43.4	27.4	14.3	14.4	8.8	13.0	34.2	29.4
8"	17.4	18.5	13.8	14.7	20.8	32.2	15.0	15.2	25.7	24.0	25.9	19.4
10"	17.3	18.4	37.7	23.0	7.7	13.2	34.6	35.0	25.2	24.5	4.2	11.8
12"	17.9	19.1	24.0	27.8	14.4	14.8	15.6	15.6	25.2	18.9	26.9	13.5
15"	62.7	66.7	9.5	15.9	4.8	3.2	21.2	20.9	10.5	17.4	17.4	33.7

Case 1: afternoon session (not priced)

Case 2: evening session (priced)

The study to determine the "per cent of each grade scoring first place" revealed several interesting points. There was price-effect in the 15" bunch. When price was not a factor the 15" bunch scored high at 62.7%, when price was a factor it dropped to the medium level (21.2). On the other hand, when price was not a factor, the 10" bunch scored 17.3. When it was a factor it increased to 34.6 per cent. Although the preference for the 6" bunch was increased from 6.0 per cent in case 1, to 14.3 per cent in case 2, the apparent preference score for this small bunch was still low compared with the others. The 8" and 12" bunches indicated no price-effect. They remained in the preference range.

The above statement was confirmed by the third analysis--"the distribution of frequency within a sample".

Conclusion: when price was not a factor the consumers indicated the 15" bunch to be their preferred size (62.7 per cent of consumers in this group). When price became a factor the preferred size changed to the 10" bunch (Table 9, case 2).

Standard Chrysanthemums

Two major investigations were conducted with this flower: color preference and number preference (unit-of-purchase). The following paragraphs are devoted to a discussion of the results of these two studies.

Color Preference

Five colors were chosen for this investigation: namely white, pink, bronze, yellow, and lavender. These are the prominent colors in standard chrysanthemums. Samples were in units of five in all tests.

The scheme of this investigation was:

Date of Test	Testing samples (color categories)
October 1957	white, yellow, bronze, lavender
November 1957	white, yellow, bronze, lavender
December 1957	white, yellow, bronze, pink

Table 10 summarizes the results of the three tests in rankings.

The findings of the two cases (sessions) showed:

Yellow was consistently high in preference.
 Pink (tested once) was medium in preference.
 Bronze and lavender were medium-low in preference.
 White varied through the preference scale.

Table 11 indicates the percentage of 1st-choice selections for the five color samples and the distribution of frequency of choices for each color sample. A figured presentation abstracted from Table 11 is included to graphically compare the average percentage of 1st-choice selections of each color sample with the expected average (Fig. 2).

Table 10.--Consumer color preference in standard Chrysanthemums: estimated rankings.

Color Sample	Estimated Ranking				Total number of consumer	Coefficient of concord- ance W
	1st	2nd	3rd	4th		
October 1957						
Case 1	Yellow	White	Bronze	Lavender	51	*.2072
Case 2	Yellow	White	Lavender	Bronze	68	*.3487
November 1957						
Case 1	Yellow	White	Bronze	Lavender	54	*.1800
Case 2	Yellow	White	Lavender	Bronze	70	*.3878
December 1957						
Case 1	Yellow	Bronze	Pink	White	48	*.1470
Case 2	Yellow	Pink	White	Bronze	80	*.1814

* Significant at 1% level

Case 1: afternoon session (in day-light)

Case 2: evening session (WWX lighting used)

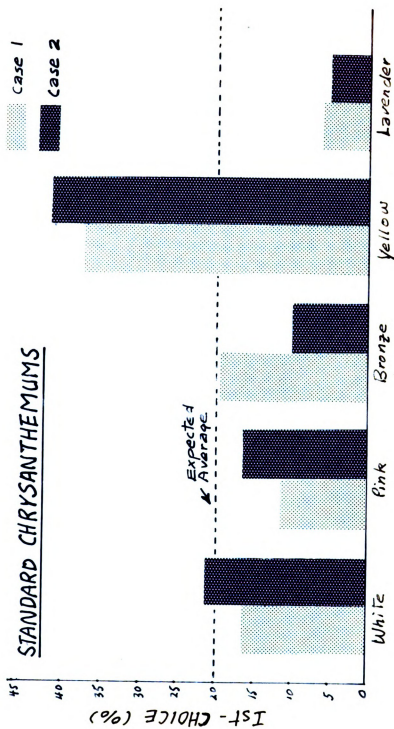
Table 11.--Consumer color preference in standard Chrysanthemums: per cent of panel selecting samples as 1st-choice and the distribution of frequency of choices within a sample.

Color Samples	Case 1)					Case 2)						
	1st-Choice	Distribution of Preference				1st-Choice	Distribution of Preference					
		1st	2nd	3rd	4th		5th	1st	2nd	3rd	4th	5th
	$\bar{(x)}$ %	$\bar{(x)}$ per cent				$\bar{(x)}$ %	$\bar{(x)}$ per cent					
White	15.9	16.4	22.7	20.3	20.5	20.0	20.6	21.4	28.0	17.9	12.7	20.0
Pink	11.7	11.7	30.0	16.6	21.7	20.0	15.8	16.0	19.0	27.0	18.0	20.0
Bronze	19.2	19.6	12.1	17.3	30.9	20.0	9.9	10.1	9.8	17.3	42.7	20.0
Yellow	37.2	38.7	24.7	12.9	3.7	20.0	40.9	42.3	25.9	10.8	1.1	20.0
Lavender	5.9	6.1	18.4	32.4	23.0	20.0	5.1	5.3	17.2	37.3	20.2	20.0

Case 1: afternoon session (in day-light)

Case 2: evening session (wx lighting used)

Fig. 2. The Comparison of the Average Percentage of the 1st-choice for Each Color Sample with the Expected Average Percentage:



There was only one color yellow with an "above average" preference (20.0 per cent) in case 1 (afternoon sessions). Two colors--yellow and white ranked above the expected average in case 2 (evening sessions). In both cases yellow was highly preferred over the other four colors. In case 1 (afternoon sessions) the model preference was for yellow: 37 per cent preferred yellow, 19 per cent preferred bronze, 16 per cent preferred white, 12 per cent preferred pink, and 6 per cent preferred lavender. In case 2, (evening sessions) yellow was more popular than white (Table 11).

These findings all agreed with the results of the analysis of "distribution of frequency of choices" in Table 11. Only yellow had high frequencies in the first two ranks (case 1--afternoon sessions: 63 per cent; case 2--evening sessions: 68 per cent).

The following table shows the results of three "write-in" experiments--Sherman's finding (115), LeClerg's finding (112), and the Feb. experiment, 1963.

	Yellow	Pink	White	Mixed	Other	No Answer
Sherman	56.6	.9	12.4	6.2	6.2	17.7
LeClerg	56.4	3.9	12.6	9.8	11.2	6.0
February 1963	41.6	4.7	12.8	4.7	20.8 (Bronze) 4.0 (Lavender)	11.4

There was agreement in the overall results of the three "write-in" studies. The February panel conducted as a part of this study indicated bronze was next to yellow in popularity.

Conclusion:

All of the tests indicated unanimously that yellow was the preferred color .

Number Preference

Six units-of-preference were chosen for this investigation: 3, 4, 5, 6, 8 and 12 standard mums. All samples were yellow in color.

The scheme of this investigation was:

Date of Test	Testing Samples (unit-of-purchase)	Special Feature (case 2 only)
February 1962	3, 4*, 5, 6	90¢ each
May 1962	3, 4, 5, 6	90¢ each
February 1963	3, 4, 5, 6, 8, 12	83¢ each

*mispricing, 34¢ instead

Table 12 summarizes the results of the three tests.

The tests showed a great price-effect on the consumer number preference in standard chrysanthemums. In general, when price was not a factor the large units were more preferred than the small units. However, when price became a factor, the small units became more popular. There was only one exception, the unit of three was low in preference throughout.

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Table 12.--Consumer number preference⁺ for standard chrysanthemums: estimated rankings.

Date of Experiment	Estimated Ranking						Total number of consumer	Coefficient of concord- ance W
	1st	2nd	3rd	4th	5th	6th		
February 1962								
Case 1	5	6	3	4			62	*.3340
Case 2	4	3	5	6			85	*.0704
May 1962								
Case 1	5	6	4	3			40	*.3201
Case 2	4	5	3	6			78	*.0815
February 1963								
Case 1	12	6	8	4	5	3	63	*.2504
Case 2	6	5	4	8	3	12	86	*.1508

* Significant at 1% level

⁺ Numbers indicate the number of flowers in a unit.

Case 1: afternoon session (not priced)

Case 2: evening session (priced)

The shift in popularity when price became a factor in the small units (of 4, 5, and 6) was dependent upon the offering-price.

Table 13 presents an analysis of the percentage of 1st-choice and the distribution of frequency of choices within a sample. In case 1 where the flowers were not priced, units of 12 were preferred significantly over the remaining five units (with 49 per cent of consumers in this group). In case 2, when the flowers were priced the popularity of the

Table 13.--Consumer number preference in standard Chrysanthemums: per cent of panel selecting samples as 1st-choice and the distribution of frequency of choices within a sample.

Unit Samples	Case 1						Case 2							
	1st-Choice	Distribution of Preference					1st-Choice	Distribution of Preference						
		1st	2nd	3rd	4th	5th		6th	1st	2nd	3rd	4th	5th	6th
	$\bar{(x)}$ %	$\bar{(x)}$ per cent					$\bar{(x)}$ %	$\bar{(x)}$ per cent						
3 Flowers	6.9	8.0	12.5	16.4	22.6	10.1	36.0	16.4	20.0	6.3	12.1	16.5	10.9	21.9
4	6.3	7.2	13.7	29.5	23.3	22.4	9.9	13.0	13.6	29.5	17.5	10.0	16.4	14.0
5	24.2	27.7	20.4	11.3	13.7	17.0	15.4	15.2	16.0	19.2	30.4	9.6	11.2	14.6
6	19.6	20.8	19.4	19.3	17.7	12.2	10.7	23.8	24.2	15.5	13.4	28.6	12.2	10.7
8	14.3	15.9	38.1	7.9	14.8	12.7	11.1	12.9	12.8	16.3	7.0	18.6	37.2	8.1
12 (dozen)	48.6	54.0	9.5	17.5	11.1	4.8	3.2	10.6	10.5	7.0	9.3	10.5	15.1	47.7

* Excluding February 1962 data--Incorrect Pricing.

Case 1: afternoon session (not priced)

Case 2: evening session (priced)

units of twelve fell to 11 per cent and the units of six became more popular (Table 13). While the units of three and four doubled the preference score as the price factor was introduced (units of three--7 per cent to 16 per cent; units of four--6 per cent to 13 per cent), no price-effect was found in the units of eight.

The analysis of the distribution of frequency of choices conveyed the same message as the preceding paragraph.

Gladiolus

Two major investigations were conducted using this flower: color preference and number preference (unit-of-purchase). The next few paragraphs are devoted to a discussion of the findings in these two studies.

Color Preference

Six colors were chosen for this investigation, namely: white, red, pink, variegated (pink and white), yellow, and lavender. They were the prominent colors in gladiolus. Samples were in units of five in all tests.

The scheme of this investigation was:

Date of Test	Testing Samples (color categories)
May 1962	white, yellow, red, lavender, variegated
September 1962	white, yellow, red, lavender, pink
November 1962	white, yellow, red, pink

Table 14 summarizes the results of the three tests.

Table 14.--Consumer color preference in *Gladiolus*: estimated rankings .

Date of Experiment	Estimated Ranking					Total number of consumer	Coefficient of concordance W
	1st	2nd	3rd	4th	5th		
May 1962							
Case 1	White	Red	Variegated	Lavender	Yellow	40	*.2479
Case 2	White	Variegated	Red	Lavender	Yellow	78	*.2049
September 1962							
Case 1	Yellow	Pink	Red	Lavender	White	49	*.0750
Case 2	Pink	Lavender	Yellow	Red	White	84	*.0695
November 1962							
Case 1	Yellow	Pink	White	Red		69	*.0778
Case 2	Yellow	Pink	White	Red		101	*.0453

* Significant at 1% level

Case 1: afternoon session (in day-light)

Case 2: evening session (wxw lighting used)

The findings of the two cases (sessions) showed:

Pink ran high or high-medium in preference,

Variegated (tested once) ran high-medium to medium in preference,

Lavender was in the medium range of preference,

Red ran medium to low in preference,

Yellow varied in the extreme in preference (high and low),

White varied along the scale of preference.

Table 15 shows the per cent of panelists who selected each of the six color samples as their 1st-choice and the distribution of frequency of choices for each color sample. A graphic presentation abstracted from this table compares the average percentage of the first choice of the color samples with the expected average (Fig. 3).

Four colors were above the average-preference (16.7 per cent) in case 1 (afternoon sessions)--white, pink, red, and yellow. Only two out of the four remained above the average in preference in case 2 (evening sessions)--white and pink.

The "distribution of frequency" of choices of the six color samples did not yield a favorable position for either white gladiolus or pink ones. No individual "preferred" color was clearly indicated in gladiolus. However both the white and pink gladiolus (salmon in trade terms) were more popular than the other four colors. The overall results compared favorably with a similar study conducted by the Mississippi Agricultural Experiment Station, (112).

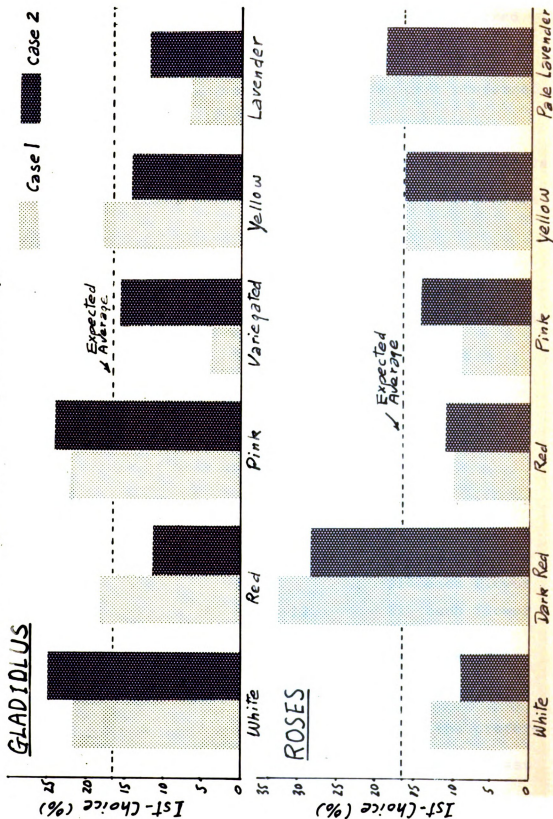
Table 15.--Consumer color preference in Gladiolus: per cent of panel selecting sample as 1st-choice and the distribution of frequency of choices within a sample.

Color Samples	Case 1.						Case 2.							
	1st-Choice	Distribution of Preference					1st-Choice	Distribution of Preference						
		1st	2nd	3rd	4th	5th		6th	1st	2nd	3rd	4th	5th	6th
	$\bar{(x)}$ %	$\bar{(x)}$ per cent					$\bar{(x)}$ %	$\bar{(x)}$ per cent						
White	21.7	22.9	14.4	17.5	12.3	15.3	16.2	24.5	25.6	13.1	15.7	13.6	16.1	16.2
Red	18.1	19.2	16.9	13.1	22.1	15.3	16.2	10.8	11.3	21.9	15.1	19.4	16.2	16.2
Pink	22.2	23.4	10.7	21.9	14.2	13.4	16.2	23.9	25.1	16.8	16.8	13.3	11.8	16.2
Variegated	4.0	4.2	21.0	29.4	18.9	10.5	16.0	15.5	16.1	21.5	23.7	16.1	6.5	16.0
Yellow	17.9	18.8	23.9	16.6	10.9	19.8	16.0	14.1	14.7	15.5	17.9	13.5	20.9	16.0
Lavender	6.8	7.2	18.3	15.6	20.8	22.0	16.0	11.7	12.4	19.0	14.4	23.6	14.7	16.0

Case 1: afternoon session (in day light)

Case 2: evening session (wxw lighting used)

Fig. 3 The Comparison of the Average Percentage of the Ist-Choice for Each Color Sample with the Expected Average Percentage:



A "write-in" panel was conducted in February 1963. The results of that panel indicated 17 per cent preferred yellow, 16 per cent preferred white, 16 per cent preferred pink, 12 per cent no color preferred, 12 per cent preferred red, 11 per cent preferred variegated, 11 per cent preferred mixed, and 5 per cent preferred lavender.

The findings of the two research methods ("visual" vs. "write-in") had a great resemblance in this case. The above conclusion seems then to be confirmed.

Number Preference

Six "units-of-purchase" were chosen for this investigation, consisting of 3, 4, 5, 6, 8, and 12 gladiolus. Samples were in yellow (May, 1962) and in white for the remaining two tests.

The scheme of this investigation was:

Date of Test	Testing Samples (unit-of-purchase)	Special feature (in case 2)
May 1962	3, 4, 5, 6	26¢ each flower
September 1962	4, 5, 6, 8	21¢ each flower
February 1963	3, 4, 5, 6, 8, 12	31¢ each flower

Table 16 summarizes the results of the three tests. And shows the rankings for the various units. The units of three and eight remained in the same position on the preference scale in the two cases. The units of three were least

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Table 16.--Consumer number preference⁺ of Gladiolus:
estimated rankings.

Date of Experiment	Estimated Ranking						Total number of consumer	Coefficient of concord- ance W
	1st	2nd	3rd	4th	5th	6th		
May 1962								
Case 1							40	.0360
Case 2	5	6	4	3			78	*.1164
September 1962								
Case 1	6	8	4	5			49	*.3198
Case 2	6	8	5	4			84	*.3008
February 1963								
Case 1	12	8	6	4	5	3	63	*.2791
Case 2	6	8	4	5	12	3	86	*.1251

* Significant at 1% level

⁺ Numbers indicate the number of flowers in an unit.

Case 1: afternoon session (not priced)

Case 2: evening session (priced)

preferred and the units of eight were high-medium in preference. The units of four and twelve became less popular as the price factor was introduced. This negative effect was even more obvious in the units of twelve which ranked tops in preference when the flowers were not priced--but moved to medium-low in preference when price became a factor. The units of five and six became more favorably accepted. Moreover, units of six ranked tops in case 2.

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Table 17 presents an analysis of the percentage of 1st-choices for the six unit samples and the distribution of frequency of choices for each unit sample. Both units of three and four showed low ratings in preference in two cases (not priced and priced). The units of six and eight each shared one fourth of the first preference ratings in afternoon sessions (not priced) and evening sessions (priced). The unit of twelve was the "modal preference" number (with 50 per cent of consumers in this group) in the afternoon sessions. Only 22 per cent of the panelists preferred it in the evening sessions.

Table 17.--Consumer number preference in Gladiolus: per cent of panel selecting samples as 1st-choice and the distribution of frequency of choices within a sample.

Unit Samples	(Case 1)						(Case 2)							
	1st- Choice	Distribution of Preference					1st- Choice	Distribution of Preference						
		1st	2nd	3rd	4th	5th		6th	1st	2nd	3rd	4th	5th	6th
	$(\bar{x})$ %	$(\bar{x})$ per cent					$(\bar{x})$ %	$(\bar{x})$ per cent						
3 flowers	9.2	10.7	4.9	16.6	18.9	17.9	31.2	12.6	13.6	8.0	7.0	21.9	18.2	31.4
4	11.8	13.4	18.7	18.1	15.4	23.4	11.4	10.4	11.5	14.9	19.7	20.0	24.1	31.4
5	8.0	9.2	16.0	15.2	20.6	21.4	17.7	9.4	10.6	18.8	22.0	18.5	15.2	12.3
6	23.9	26.9	16.1	19.1	11.6	10.7	12.2	26.5	28.4	18.7	17.6	11.7	10.0	8.9
8	17.4	19.2	28.7	16.2	13.2	12.2	10.7	24.0	24.3	24.3	7.1	13.2	17.0	10.6
12 (dozen)	50.0	55.6	15.9	12.7	4.8	3.2	7.9	22.1	22.1	11.6	12.8	4.7	12.8	36.0

Case 1: afternoon session (not priced)

Case 2: evening session (priced)

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Color Preference

The scheme of this investigation was:

Table 18 summarizes the results of the two tests.

Dark red was high in preference,
Yellow ran high-medium to medium in preference
Red (Better Times) was medium in preference,
Pink ranked low in preference except in Nov. 1962
of case 2 (evening session),
White and pale lavender (Sterling-Silver)--(both
tested once) were low in preference

Table 18.--Consumer color preferences in Roses: estimated rankings.

Date of Experiment	Estimated Ranking						Total number of consumer	Coefficient of concordance
	1st	2nd	3rd	4th	5th	6th		
September 1962 Case 1	Dark Red	Yellow	Red	Pink			49	*.2621
Case 2	Dark Red	Yellow	Red	Pink			84	*.1606
November 1962 Case 1	Dark Red	Yellow	Red	White	Pink	Pale Lavender	67	*.0560
Case 2	Dark Red	Pink	Yellow	Red	White	Pale Lavender	101	*.0927

* Significant at 1% level

Case 1: afternoon session (in day light)

Case 2: evening session (www lighting used)

Table 19 shows the percent of panelists who placed each of the six colors first and the distribution of frequency of their choices for each color sample. Fig. 3 presents data abstracted from this table designed to provide a comparison of the number of first choices recorded for each of the color samples with the expected average.

Two colors were found to have an "above average" (16.7 per cent) preference (afternoon and evening sessions) in two cases. They were dark red and pale lavender. Dark red was more popular than pale lavender (Table 19).

The analysis of the distribution of frequency of choices for dark red roses, showed the preference score for dark red concentrated in the first two ranks . In pale lavender the modal preference score occurred in the last rank (Table 19). This explains the contradictory presentation between the ranking analysis and the first preference analysis for this particular color. Though pale lavender roses did show a relatively high percentage of preference in the first-choice category in the color sample test, however within its own color class a greater proportion of people disliked the color. Thus pale lavender appeared low in the estimated ranking study. (The author noticed that those panelists revealed a high preference in this color partially because it is considered a novelty to them.)

Table 19.---Consumer color preference in Roses: per cent of panel selecting sample as 1st-choice and the distribution of frequency of choices within a sample.

Color Samples	Case 1						Case 2							
	1st-Choice	Distribution of Preference					1st-Choice	Distribution of Preference						
		1st	2nd	3rd	4th	5th		6th	1st	2nd	3rd	4th	5th	6th
	$\bar{(x)}$ %	$\bar{(x)}$ per cent					$\bar{(x)}$ %	$\bar{(x)}$ per cent						
White	12.5	13.0	13.0	18.8	24.6	17.4	13.0	8.6	8.9	12.9	11.9	19.8	28.7	17.8
Dark Red	32.8	33.8	26.8	10.0	12.0	11.2	12.7	28.3	29.8	24.7	9.2	11.5	14.6	10.3
Red														
(Better Times)	8.8	9.2	14.2	26.0	17.7	17.0	16.7	10.9	11.6	14.0	20.6	22.8	17.2	16.7
Pink	9.0	9.2	14.1	22.4	18.8	20.7	14.9	14.2	14.9	16.7	19.8	22.8	14.9	12.8
Yellow	16.2	16.7	28.2	12.7	13.7	17.0	12.0	16.4	17.4	18.9	23.8	11.8	14.6	13.3
Pale														
Lavender	20.9	21.7	7.2	10.1	15.9	13.0	31.9	19.0	19.8	7.9	10.9	5.9	13.9	41.6

Case 1: afternoon session (in day light)

Case 2: evening session (wxw lighting used)

The following table shows the results of three "write-in" experiments--Sherman's finding (115), LeClerg's finding (112) and the test of February 1963.

	Red	Yellow	Pink	Mixed	Other	No answer
Sherman	54.5	22.3	.9	5.4		10.7
LeClerg	56.0	16.6	14.4	1.9		3.9
Feb.	30.8	19.9	6.4	3.9	1.9 (Pale Lavender)	4.5
1963	26.9	(dark red)			5.8 (White)	

There was agreement between the findings of the three "write-in" methods. It generally corresponded with the preceding findings of the "visual" experiments.

There was a superficial deviation between the findings of the "visual" and "write-in" panel on red and dark red. This may have been due to the fact that the variety of red roses used in the "visual" panel--Better Times is not a distinct red. (Because of the popularity of this variety in the flower market, its varietal name was used to denote a certain degree of color saturation of red as characterized in this variety.) It was inferior (not distinct) only in the sense of comparison with some other red varieties. It still remained competitive with other samples in the tests. Yet when the panel members were asked about their color preference in the "write-in" experiment case, they naturally associated the color "red with the superior (distinct) red roses and with other

colors. Red roses are very popular flowers in this country.

In conclusion the red roses, in a broad sense, would be considered to be "the most popular" color in roses. Yellow roses were second in popularity.

Number Preference

Five units-of-purchase for three different grades of roses were chosen for this investigation: 3, 5, 7, 9, and 12 (a dozen). The variety Better Times was used for this test. Flowers with stems 9", 12", and 15" long were used. They were treated as three independent series in all the testing panels.

The scheme of this investigation was:

Date of Test	Testing Samples	Special Feature
	Number in each unit	(Price at retail in case 2)
January 1957	9": 3, 5, 7, 9, 12	24¢ each flower
	12": 3, 5, 7, 9, 12	30¢ each flower
	15": 3, 5, 7, 9, 12	36¢ each flower
February 1957	9": 3, 5, 7, 9, 12	16¢ each flower
	12": 3, 5, 7, 9, 12	20¢ each flower
	15": 3, 5, 7, 9, 12	24¢ each flower
March 1957	9": 3, 5, 7, 9, 12	20¢ each flower
	12": 3, 5, 7, 9, 12	24¢ each flower
	15": 3, 5, 7, 9, 12	30¢ each flower
April 1957	9": 3, 5, 7, 9, 12	20¢ each flower
	12": 3, 5, 7, 9, 12	24¢ each flower
	15": 3, 5, 7, 9, 12	30¢ each flower
May 1957	9": 3, 5, 7, 9, 12	16¢ each flower
	12": 3, 5, 7, 9, 12	20¢ each flower
	15": 3, 5, 7, 9, 12	24¢ each flower

Table 20 summarizes the results of the five tests.

Table 20.--Consumer number preference⁺ in Roses: estimated ranking.

Date of Experiments	Estimated Ranking					Total number of consumer	Coefficient of concordance W
	1st	2nd	3rd	4th	5th		
9" Jan. 1957							
Case 1							
Case 2	7	9	5	3	12	90	*.0817
Feb. 1957							
Case 1	7	9	5	12	3	48	*.1614
Case 2	7	9	12	5	3	80	*.1352
Mar. 1957							
Case 1	5,7		9	12	3	53	*.0839
Case 2	7	9	5	12	3	68	*.0807
Apr. 1957							
Case 1	5,7		9	3	12	51	*.1753
Case 2	5	7	12	9	3	85	*.1254
May 1957							
Case 1	5	9	7	3	12	64	*.0646
Case 2	9	7	12	5	3	84	*.0974
12" Jan. 1957							
Case 1							
Case 2	5	7	9	3	12	90	*.0564
Feb. 1957							
Case 1	9	7	5	12	3	48	*.2036
Case 2	9	7	5	12	3	80	*.1480
Mar. 1957							
Case 1	7	5	9	12	3	53	*.3675
Case 2	5	9	7	12	3	68	*.0497
Apr. 1957							
Case 1	7	5,9		3	12	51	*.0708
Case 2	7	9	5	3	12	85	*.1740

Table 20.--Continued

Date of Experiments	Estimated Ranking					Total number of consumer	Coefficient of concordance W
	1st	2nd	3rd	4th	5th		
May 1957							
Case 1	7	5	9	3	12	64	*.1555
Case 2	12	7	5	9	3	84	*.0732
15" Jan. 1957							
Case 1							
Case 2	5	7	9	3	12	90	*.0591
Feb. 1957							
Case 1	7	9	5	12	3	48	*.2325
Case 2	7	9	5	12	3	80	*.0629
Mar. 1957							
Case 1	7	5	9	12	3	53	*.1456
Case 2	5	7	9	3	12	68	*.0713
Apr. 1957							
Case 1	5	7	3	9	12	51	*.1200
Case 2	5	7	9	12	3	85	*.1328
May 1957							
Case 1	7	5	9	3	12	64	*.3352
Case 2	7	12	9	5	3	84	*.1180

*Significant at 1% level

⁺Numbers indicate the number of flowers in an unit.

Case 1: afternoon session (not priced)

Case 2: evening session (priced)

The data revealed in the three grades of Better Times roses that there was no great price-effect on the consumer number preference. The preferred "unit-of-purchase" was seven, regardless of grade and whether or not the flowers were priced.

Table 21 shows the percentage of panelists who selected each of the five units in the three grades as their 1st-choice. It shows also the distribution of frequency of choices for each unit sample in three grades. The unit consisting of three roses was the least preferred number in the three grades in both case 1 and 2 (afternoon session--not priced, and evening session-priced).

For 9" roses, the unit of seven and twelve achieved the same relative high preference score (Table 21, case 1--not priced). There was no price-effect on the number preference.

In the 12" roses, the preference was quite evenly distributed among the unit -5, -7, -9, -12. No price effect was found in the number preference.

The same pattern of preference distribution was found in 15" roses as in the 12". Price however had some bearing on the acceptibility of the units of none and twelve in 15" roses.

In conclusion, the tests showed no preference for any specific number of Better Times roses in any of three grades. The unit of three was the least preferred number. No profound price-effect based on the number of roses in the unit was indicated.

Table 21.---Consumer number preference of Roses: per cent of panel selecting samples as 1st-choice and the distribution of frequency of choices within a sample.

		Case 1.					Case 2.					
Unit Samples	1st-Choice	Distribution of Preference					1st-Choice	Distribution of Preference				
		($\bar{x}$) %	1st	2nd	3rd	4th		5th	($\bar{x}$) %	1st	2nd	3rd
9" 3 Flowers	11.5	12.7	21.9	11.6	18.0	33.4	17.8	20.8	18.3	13.4	16.4	40.7
	18.6	20.2	28.9	18.0	27.1	5.8	16.8	19.7	27.7	17.3	26.6	8.6
	25.3	28.0	18.5	34.9	9.7	8.9	22.2	25.9	24.7	32.5	11.9	4.4
	19.5	21.3	24.0	19.0	28.4	7.4	18.7	22.0	24.9	21.6	24.4	7.1
	25.2	28.2	10.7	10.4	12.4	38.0	24.5	28.7	12.9	12.7	16.3	29.4
12"	12.3	13.6	15.9	14.8	18.4	37.4	14.1	18.7	11.2	16.4	15.0	38.7
	20.4	19.0	24.0	30.0	22.6	4.6	18.9	22.8	23.8	23.7	23.8	7.3
	26.8	28.6	22.4	34.2	9.7	7.6	20.2	21.3	29.6	29.2	12.3	7.5
	22.2	24.1	25.5	15.9	28.6	5.9	23.4	25.8	21.4	20.0	24.6	7.9
	18.4	20.0	8.9	15.4	15.7	40.2	23.4	27.0	12.7	12.3	17.5	30.5
15"	17.2	18.6	13.9	14.6	17.0	36.0	16.1	18.7	13.1	14.3	16.8	37.0
	20.1	22.2	28.6	17.9	23.7	7.6	22.4	25.5	28.8	16.7	20.4	8.7
	23.4	26.4	21.4	40.4	7.4	4.2	21.5	24.5	23.0	33.0	11.0	8.4
	21.9	24.7	20.4	15.2	36.8	3.9	13.6	15.7	23.4	21.8	31.5	7.5
	17.5	19.6	15.8	9.9	12.2	42.5	26.4	29.8	10.9	10.5	16.8	32.0

Case 1: afternoon session (not priced)

Case 2: evening session (priced)

Grade Preference

As in commercial practice the grades used in this study were based on the stem-length. Four lengths were selected for this investigation: 9", 12", 15", 21". The variety Better Times was used here. The samples were in units of five and the indicated prices were for the whole group of five flowers.

The scheme of this investigation was:

Date of Test	Testing Samples (stem-length)
February 1960	12" (95¢), 15" (\$1.39), 21" (\$1.95)
September 1962	9" (\$1.15), 12" (\$1.49), 15" (\$1.89)
February 1963	9" (\$1.39), 12" (\$1.79), 15" (\$2.29)

Table 22 summarizes the results of the three tests.

Table 22.--Consumer grade preference of Roses: estimated rankings

Grade Samples	Estimated Ranking			Total number of consumer	Coefficient of concordance W
	1st	2nd	3rd		
February 1960					
Case 1	12"	15"	21"	57	*.1922
Case 2	12"	15"	21"	79	*.2059
September 1962					
Case 1	15"	12"	9"	49	*.2403
Case 2	12"	9"	15"	84	*.1634
February 1963					
Case 1	15"	12"	9"	63	*.3612
Case 2	12"	15"	9"	86	*.1711

*Significant at 1% level

Case 1: afternoon (not priced)

Case 2: evening (priced)

The tests showed a great price-effect on consumer grade preference. In case 1 when the flowers were not priced the 15" grade was preferred, whereas in case 2 where the flowers were priced the 12" grade was preferred.

Table 23 shows the per cent of panelists who selected each of the four grade samples as their 1st-choice and the distribution of frequency within the samples. The findings revealed both 9" and 21" roses were low in preference in cases 1 and 2. In case 1 the 15" roses were more popular than 12" (15" was preferred by 38 per cent panelists, 12" by 26 per cent, 21" by 12 per cent, and 9" by 10 per cent). In case 2 the 12" became more popular than the 15" (12" was preferred by 32 per cent panelists, 15" by 29 per cent, 9" by 16 per cent, and 21" by 11 per cent).

Table 23.--Consumer grade preference in Roses: per cent of panel selecting samples as 1st-choice and the distribution of frequency of choices within a sample.

Grade Samples	(Case 1,				(Case 2,					
	1st- Choice	Distribution of Preference			1st- Choice	Distribution of Preference				
		1st	2nd	3rd		4th	1st	2nd	3rd	4th
	$\bar{(x)}$ %	$\bar{(x)}$ per cent				$\bar{(x)}$ %	$\bar{(x)}$ per cent			
9"	10.0	10.2	14.1	50.6	25.0	15.7	16.0	18.6	52.9	25.0
12"	26.3	27.4	34.0	13.7	25.0	32.3	33.3	31.8	10.9	25.0
15"	38.0	39.0	31.2	8.7	25.0	28.6	31.6	27.3	16.2	25.0
21"	11.9	12.5	9.8	52.8	25.0	11.1	11.6	16.4	47.1	25.0

Case 1: afternoon session (not priced)

Case 2: evening session (priced)

CHAPTER V

RETAIL SALES SURVEY

Howell (55) listed three methods already tried out for obtaining information regarding consumers' preferences:

(1) consumers' preference surveys, (2) consumer purchase surveys, and (3) retail sales surveys. Two of the three methods were employed in this study; namely the consumers' preference survey and the retail sales survey.

In the preceding chapters the discussion was centered on a study of the consumers' preference survey. This phase was designed to present the secondary phase of the research--a retail sales survey.

Generally, a retail sales survey is planned to assemble data regarding volume of sales, prices, and other factors for a specific product, which would show the relationship of sales volume to prices and to other factors. In this study, in addition to the conventional point of interest--price effects, a few other specific factors were included.

These specific features were related to the characteristic of the flower itself, e.g., color of the flower, or the general appearance of the merchandise.

As indicated previously this survey was purposely designed to supplement the consumer preference study.

Rhodes (73) stated: "The fact that product A's average preference score is found to exceed 'significantly' product B's average preference score does not necessarily mean that more people prefer A than prefer B or that more of A will be sold than of B." Hence, it is rather desirable to compare the findings of the two types of survey, and to see how closely the results of the consumer stated preferences compare to their marketing behavior. As there may be a discrepancy between what people say they desire and what they really desire, the relationships between "saying" and "doing" were investigated. The hypothesis tested is that consumers' stated preferences differ from their actual preferences for certain flowers, color and grades.

The report submitted in this chapter is mainly designed to relate the results of the retail sales survey. The results of the consumer trials and the retail sales survey will be compared in the next chapter under the heading of "relationship of consumer stated preferences to their marketing behavior."

In this chapter the presentation proceeds as follows:

- (1) survey procedures, (2) characteristics of the participating florists, and (3) results.

Survey Procedures

Surveyed florists were selected as follows: questionnaires were sent by mail to 657 names obtained from the latest Michigan State Florist Associations' Membership Directory. Only the establishments classified as retail growers or retail florists were contacted.

Von Oppenfeld (85) pointed out that in Michigan 78 per cent of all sales were reported from "retail-grower" and "retail florists" outlets. Hence the selection of this sampling population is justified in this survey.

The basic questions asked concerned: (1) general information of the surveyed florists, (2) purpose of consumers' flower purchasing, (3) consumer color preferences (acceptance in this case), (4) size of units of purchase (**Appendix 2**). The latter two investigations were limited in the following flowers: carnations, pom-pons chrysanthemums, standard chrysanthemums, gladiolus, and roses.

One hundred forty three out of the 657 florists responded--representing about 22 per cent of those contacted. Only 123 of the returned questionnaires were included in the final study, since the remaining 20 did not provide clear and concise information.

Characteristics of the Reporting Florists

Sales Volume

The distribution of retail florist shops by size of establishment in this survey was as follows:

<u>Size of retail establishments</u> <u>(dollar volume)</u>	<u>Distribution of establishments</u> <u>(number)</u>
30,000 or less	52
31,000 - 60,000	38
61,000 - 90,000	17
91,000 - 120,000	10
121,000 or more	6

This profile of distribution of retail florist shops by size of establishments characterizes the National picture [Trotter (118) and the 1958 Census of Business on Retail Trade--Sales sizes]. Therefore, it was considered a good sample.

Retail Florist Sales by Size of City

Von Oppenfeld (119) showed that for the United States there is a relationship between the size of cities and the volume of retail florist sales. This survey confirmed his statement (Table 24).

Table 24.--Percentage distribution of retail florist sales by size of city.

Sales Volume (dollar)	Percentage distribution of sales by cities of									
	4,999 or less	5,000 14,999	15,000 29,999	30,000 59,999	60,000 119,000	120,000 239,999	240,000 449,999	500,000 or more		
30,000 or less	44.0	24.0	10.0	10.0	2.0	6.0		4.0		
31,000 - 60,000	2.7	35.1	24.3	5.4	13.5	8.1	2.7	13.5		
61,000 - 90,000		23.5	11.8	29.4	5.9			11.8		
91,000 - 120,000			10.0		70.0	10.0	10.0			
121,000 - or more						33.3	33.3	33.3		

Store Traffic and Location of Stores

Forty-three per cent of the reporting florists indicated their stores were located on the roadside, 37 per cent in neighborhood shopping districts, and 20 per cent in central shopping districts.

Thirty-seven per cent of the florists indicated that their traffic causing feature was a main highway, 17 per cent drew major business from a hospital, 12 per cent from a cemetery, 10 per cent from a shopping-center, 8 per cent from schools, and 5 per cent from office-buildings.

The above findings were not in agreement with reports by Knight (111), and Von Oppenfeld (119).

Results of the Survey

Consumer Buying Habits

Eighty-two per cent of the reporting florists had 60 per cent or higher of their customer's orders placed by telephone. The purposes for consumer flower-buying in carnations, chrysanthemums, gladiolus, and roses are revealed in Table 25. These figures reflected the importance of the funeral and wedding business to the retail florist. Roses had more diverse usage than other flowers.

Table 25.--Percentage distribution of consumer flower-buying by types of flowers

Occasions	Types of flowers				
	Roses	Carnations	Mums (std.) ($\bar{x}$) per cent	Pom-pons	Gladiolus
Funeral & Grave	29.8	34.3	58.4	45.5	52.5
Hospital	12.3	12.3	7.4	15.7	10.3
Wedding	12.6	18.6	8.3	10.2	10.0
Commercial decoration	6.4	7.5	12.4	10.0	11.0
Birthday	14.1	8.7	5.7	5.7	5.9
Anniversary	16.5	8.8	6.0	5.6	6.4
Every-day use	10.6	11.0	9.7	12.8	11.9
Other occasions	11.5	14.1	10.5	9.6	10.8

Consumer Color Acceptance

Table 26 summarizes consumer color acceptance in the four major flowers revealed by the 123 reporting florists.

Table 26.--Average percentage distribution of consumer color acceptance--by types of flowers.

Type of flower:

Roses:	Red (58.0) Dark red (33.9) No color specified (23.8) Pink (9.5) Yellow (8.8) white (8.8) mixed color (7.5)
Carnations:	no color specified (34.3) White (23.3) Red (22.0) Light Pink (21.0) mixed color (16.6) Other [dyed] (10.8) Dark Pink (9.7) Variegated (8.2) Yellow (7.0)
Mums (std.):	No color specified (35.2) Yellow 28.5) White (26.2) Bronze (14.7) mixed color (14.7) Lavender (9.2) Pink (8.2) Other (7.6)
Pom-pons:	No color specified (41.1) Yellow (24.0) White (23.3) Mixed color (21.5) Pale Bronze (10.0) Dark Bronze (9.5) Lavender (7.9) Pink (6.9) Dark Lavender (6.0)
Gladiolus:	No color specified (50.3) Mixed color (23.4) White (20.0) Pink (17.8) Red (15.0) Yellow (11.6) Variegated (9.4) Lavender (8.0)

The Unit of Flower Sales

Table 27 summarizes the unit of flower sales for the five major flowers indicated by the 123 reporting florists.

Table 27:--Average percentage distribution of unit of flower sales: by types of cut flowers.

Type of flower	Size of Unit Purchase					
	3 Flowers or less	4 Flowers	5 Flowers	6 Flowers	7 - 11 Flowers	dozen or more
Roses	13.0	5.1	4.2	13.2	5.0	75.3
Carnations	16.8	5.1	5.6	18.5	12.1	66.2
Mums (std.)	20.8	8.2	14.4	27.4	18.3	49.3
Gladiolus	7.7	4.4	5.0	18.9	17.9	76.0
	1 bunch		2 bunches		3 bunches	
Pom-pons	73.5		19.3		19.5	

CHAPTER VI

DISCUSSION

Preference Study

This paper is designed to measure the consumer preference for flowers, i.e., study consumer desire for selected flowers. The measurement of preference was designed to determine the particular situation or situations in which preferences can be feasibly ascertained, to select the ones desired, and to interpret the results accordingly.

However, confusion abounds in the literature describing investigations of "consumer acceptance" and "consumer preference". The basic problems are the same two that cause confusion throughout the whole field of investigation research. The first is the failure to define precisely, and to suitably restrict the subject of investigation. The second is the failure to employ a technique which can meet the objective.

The term "acceptance" of a particular commodity most frequently involves either a measure of the quantities bought or of the number of consumers who buy the commodity when the "usual" alternatives are offered in conjunction therewith,

and when the price and income structures are known and fixed. The time interval, the population of consumers, and the units of the classes or alternatives are then stated or assumed to be known.

The word "prefer" indicates a certain ranking. An assertion that one member of a class of alternatives is preferred to another clearly identifies at least two members of the class. Thus it would appear that if either individual or group consumer preference for a number of commodities were to be measured, a ranking of these commodities by the consumers should be sought. The class of alternatives may well consist in part of those constituting the "Usual" environment, but in a measurement of preference among a group of commodities every consumer must rank every member of the group.

Preference studies frequently answer the question of why consumers buy or do not buy a product, and are therefore the logical precursors of many acceptance studies. They limit the forms of a product which must be subjected to acceptance measurement and demonstrate the existence of alterable preferences founded upon ignorance, prejudice, or fancy [Burrows (46)].

The preference study denoted here is still different from the traditional marginal utility theory which is also a study based on the revealed preferred frequencies. While the

distinction between preference and utility may appear to be verbal, the distinction is apparent in the types of questions asked in consumer research. In preference inquiry the respondent is asked how much he would like to have the article in question, not how much satisfaction he experiences from it. Measurement of preference reflects not only degree of satisfaction but also the dynamics of habit, social pressure, advertising influence and any other factors which determine consumer choice[Benson (36)].

Churchman (5) in his article "The consumer and his interest", 1946, throws some light on this delicate subject. First he defined the consumer in terms of his purposes--which are different from the purposes of production, since interests refer to purposes, and an action serves the interest of the consumer if it assists him in the accomplishment of his consumer-ends. It might be thought that since one can claim success in trapping the consumer within the tyranny of his words, he can almost automatically grasp the meaning of the consumer's interest as well. That is to say shall "consumer interest" be equivalent to "consumer desire"? If one then wants to know whether a certain product serves the consumer interest, it is only necessary to measure preferences, evaluate biological factors such as health, well-being, etc., and in general run the entire gamut of people's desires.

Churchman claimed that one of the most serious fallacies of the consumer problem is to assume that the measurement of consumer interest depends solely upon the measurement of consumer desire. For only those consumer purposes which serve him best can be used in considering consumer interest.

The "Economic Strength" of Preferences

The "economic strength" of preferences refers here to the extent to which the preferences among a set of products are a function of their price relationships. This strength is very relevant to the problem of which and how many grades or selling-units should be offered to a customer population of divergent preferences.

The determination of the economic strength of preferences was particularly important in the uni-product selection problem (choosing one of several alternatives to be merchandised). This was especially true when the most popular product was the most expensive product to be merchandised. Such determination is important among the whole set of products in a multi-product marketing situation. The price relations and the market channels for all of the products need to be estimated.

An example shown here was the determination of economic strength of preference in the uni-product selection problem (Table 28, c.f., Table 21). The retail sales survey

Table 28.--The economic strength of consumer number preference in the three grades of roses.

Grades	Date of experiment	Price	Unit of purchase				
			3	5	7	9	12
			per cent of 1st-choice				
9"	1. Feb., May 1957	16¢ each	14.0	10.8	22.8	25.4	27.0
	2. Mar., Apr.1957	20¢ each	15.8	24.2	19.2	15.3	25.4
	3. Jan. 1957	24¢ each	29.0	14.0	27.1	12.1	17.8
12"	1. Feb., May 1957	20¢ each	12.1	17.3	19.8	23.0	28.4
	2. Mar., Apr.1957	24¢ each	12.1	21.4	19.1	27.8	19.6
	3. Jan. 1957	30¢ each	21.8	17.3	24.5	15.5	20.9
15"	1. Feb., May 1957	24¢ each	13.0	12.4	29.6	19.8	30.2
	2. Mar., Apr 1957	30¢ each	14.6	31.6	15.2	13.4	24.9
	3. Jan. 1957	36¢ each	25.2	24.3	18.0	10.8	21.6

revealed that 75 per cent of the roses were sold in units of 12 or more rather than some smaller units. No doubt this most popular unit was the most expensive product offered. It thus fulfilled the justification of "economic strength" of preferences in this study.

Table 28 indicates no preferred preference unit in any of the 9", 12", or 15" roses over a range of the tested prices. It was clear that consumers were price-conscious. When price was a factor larger units (six or more) were preferred in the low price range. The units of five became popular as the price raised to the medium of price-range. The units of three were more popular when the price range was higher. None of the units in any of the three grades of

roses got a "strong" preference in the light of its economic strength preference analysis.

However, the units of twelve showed relatively "greater" strength than the other smaller units. This was countered by the two different motivations in consumer flower buying. In some instances, such as when a congratulatory gift is purchased, the consumer wants to satisfy a desire for prestige and status. The price of the product then becomes important (and/or the price is not so important as the quantity), because under these circumstances, the flowers must be elegant enough and perhaps large enough to make an effective showing. However, when flowers are to be purchased for the home the consumer shifts his image to one of low prices for economy purposes.

The above finding of no strong "economic strength" preferences of consumer buying units in roses projected a general pattern of "economic strength" preferences in other studied flowers. On the other hand, the panelists revealed "modal expenditure" for the studied flowers, such as: \$3.50-\$3.79 for pom-pon chrysanthemums (Table 7 and 8), and \$3.60-\$4.98 for standard chrysanthemums (Table 12).

Table 28 also indirectly indicates that a potential home-use market exists in all grades of roses. Price was recognized here as an important factor which materially affected consumers' buying

habits where roses were involved. This coincided with the results of another test (Feb. 1963 write-in test), which indicates that 43 per cent of the panel members do not use more cut flowers in home decoration because of the high retail price of flowers. Twenty-eight per cent indicated that they do not buy more frequently because of the "short shelf-life of flowers". Twelve per cent indicated that they were not accustomed to using flowers. Six per cent indicated that flowers were not readily available. Five per cent indicated limited knowledge about flowers. Four per cent relied on their own garden supply, and 2 per cent claimed personal dislike for flowers. The second main reason was also indirectly related to the first important reason. Price played an important role in discouraging consumers from buying flowers for home-use.

More studies are needed to develop marketing methods which will secure a larger share of the consumer's dollars for flowers. The study of "economic strength" of preferences is a good approach. This study will solve many problems in the multi-product selection program. That program is a most urgent task which a progressive marketer must face.

A System of Color Preferences

It is well known that most flowers purchased today are not seen by the purchaser. It seems possible however

that with the changing market condition, consumers will see more floral products in the future. Thus one can expect a whole new series of preferences to arise. The choice in the future will not be entirely up to the retailer as it is today. Color preferences may be the first to undergo change.

The color terms used to denote particular colors in the color chart were not invested with a special technical meaning. Terms in "common" usage were employed. However a horticulture color chart (121) was consulted in the latter part of the color preference tests.

The study showed that color preferences varied with regard to individual flowers, although with some flowers the "preferred color" was not clearly defined, e.g. carnation, pom-pom chrysanthemum and gladiolus.

In general there are few factors that would effect the expressed color preference. These can be grouped into three categories, namely: the subjective variables, the objective variables, and the environmental variables.

The subjective variables here denote such things as personal taste [Grange (50)], and gender of the person [Guilford (53); Pasto, et. al., (68),]. The objective variables included all the qualitative properties of the objective stimulus [Grange (50)]. It was noted in the panel study a slight quality difference (other than color) in the samples

would affect the consumers color preference. This explains why there were some inconsistency in the findings of their replicates on color preference test of that flower. Other objective variables are such as: the hue, brightness and saturation of a context [McCormuk, et. al., (65)]. This might be one of the subtle factor which induced a inconsistency in the two methods of testing (visual vs. write-in) in color test on pom-pon chrysanthemums.

Finally, Riesen (74) pointed out that man's response to color may depend predominantly on specific environmental factors. Here, only two environmental elements were extended into further discussion.

The first element had to do with the role of light on color preference. Sanders (75) stated: ". . . preferred color for any object may differ from the color of the object in day light due to psychological influences. The range of acceptable colors depends on the object and the extent to which its quality varies with color." Moreover the role of light on color preference has more than a psychological influence. Sorensen, et. al. (116) pointed out: "Some flower colors, such as red and bronze, look 'dead' under the usual daylight fluorescent lighting in supermarkets."

Unfortunately the lighting of the laboratory under which this study was conducted was probably the type Sorensen

referred to (warm white deluxe fluorescent, i.e., WWX). The findings reported here substantiate the observations made by Sorensen. However the red color probably did not appear half as 'dead' as the bronze under the WWX, since only the result with gladiolus showed a material difference between the day light session and the evening session (using WWX lighting) (c.f. Fig. 3). The preference for bronze pom-pon and standard chrysanthemums decreased considerably in the evening when fluorescent tubes provided the only light source (c.f. Fig. 1 and 2). On the contrary, it seemed that the preference for all white flowers except white roses increased when they were exhibited under artificial light (c.f. Fig. 1 and 2).

The second environmental element involved was the temperature. Bryant (44) indicated the effect of temperature on consumer color preferences in roses. He reported:

" . . . red is best except during extremely hot periods in the Summer months when cooler colors such as pink and yellow are desired." This seasonal-variation in color preference was not noted in this study, perhaps due to the fact that the panels were conducted only in the relatively cool seasons.

Relationship of Consumer Stated Preferences to Their Marketing Behavior

This project was designed to test the hypothesis that consumers' stated preferences differ from their actual

preferences which were revealed by the retail florists. Much of the theory referred to the field of social psychology as interpreted by Myrdal (18). Generally, most people have a desire to please. According to Myrdal, people want to be rational and objective in their beliefs. They are inclined to express only those beliefs for which they have reasons. In exchanging ideas, people prefer to give good, logical, or popular reasons for a particular belief or action. These reasons may not be the true reasons. It is this situation which creates evaluation problems in a preference study.

In this research it was anticipated that the above mentioned psychological factor would not be very important in creating a discrepancy between what people say and what they do. The type of answer sought in this research were more or less outside the ordinary scope of things about which people have a desire to please. Yet the potential influence of this factor was acknowledged.

It was felt that there are two factors which heavily influence the discrepancy between the consumers' stated flower preferences and their actual preferences. One of the two influential factors is the consumer's economic behavior and its effect on their choice of the floral products. The other factor was that more than half of the flowers sold at retail are used for funerals and weddings. Under these

circumstances, the consumer frequently does not assert a preference and the choice of flowers used is left up to the retailer.

Psychologically panel members might have been subjected to all of these same compromises and desires to conform, and to all these same practices of "obligation buying" and "dependence on retail florists".

Three main aspects were involved in testing the relationship of consumer stated preferences to their marketing behavior, using the four selected types of flowers. These aspects were: (1) color preferences, (2) number preferences, and (3) grade preferences.

Color Preferences

The hypothesis was accepted in this test--consumers' stated preferences differ from their actual preferences which were revealed by florists.

In the retail sales survey, "no color preferences" were noted with the modal preference and even appeared to be the prominent choice for all concerned flowers except roses. These findings did not agree with the consumer survey. Even with pom-pon chrysanthemums, which were rated with the highest "no color preference" score, the "no color preference" still was less popular than colored samples of that flower.

The color that ranked second in the retail sales survey for all selected flowers except roses was "white". For the types of flowers studied, it rated high as a color in the consumer survey, but it was less popular in the retail sales survey.

Another deviation involved in the rating of "mixed colors". In the consumer survey mixed colors rated a low preference yet it ranked high in actual consumer buying.

In short, there seemed to be no close relationship between the consumers' stated color preferences and their actual marketing behavior. This discrepancy was greater in those flowers where consumers did not show a pronounced preference for color, e.g.: carnations, pom-pom chrysanthemums, and gladiolus.

Number Preference

The hypothesis was rejected in this test--consumers' stated preferences do not differ from their actual preferences which were revealed by florists. The overall results of the retail sales survey for all flowers tested compared favorably with the results of the consumer studies (c.f. Table 36 with the per cent of 1st-choice in all instances in the case 2 observations in Table 4, 7, 13, 17, and 21).

The prices indicated in various flower exhibits in the consumer panel studies were comparable with the

prevailing retail price-range of that flower (revealed from retail sales survey). Only the standard chrysanthemums were priced higher than the prevailing price range (revealed from the florists' survey). Other flowers were priced lower than the prevailing price range. It is possible that this explained why only the unit of twelve standard mums was not the most popular unit as revealed in the consumer preference study. This was in contrast to the results indicated in the retail sales survey.

Concluding, a close relationship was evident between the "unit-of-purchase" preferences stated by consumers and their actual "buying unit". The number preference ran largely to dozens and half-dozens except with pom-pom chrysanthemums. In consumer studies the two popular units were very competitive in the number preference whereas in the retail sales survey the units of twelve (one dozen) were indicated to be one to three times more favorably received than the units of six (half-dozen).

Grade Preference

The hypothesis was rejected in this test--consumers' stated preferences do not differ from their actual preferences which were revealed by florists. The overall results of the consumer studies on grade preference in pom-pom chrysanthemums (size of the bunch) and roses (stem-length) compared favorably with the established retail practice [See case 2 (evening session-priced) in Table 9 and 23].

Pom-pom chrysanthemums are frequently sold in bunches of approximately 10" in diameter and as indicated in the consumer survey this was a desirable size compared to the other four alternative sizes [Table 9 case 2 (priced): 10" was preferred by 35 per cent of the panelists, 15" by 21 per cent, 12" by 16 per cent, 8" by 15 per cent, and 6" by 14 per cent].

Twelve inch and 15" roses are popular on the rose market whereas 9" roses are in lesser demand. This was also born out in the consumer study.

Evaluation of the Present Study

In the beginning of the paper, it was pointed out that this study was designed as a study to ascertain the preferences of consumers for four types of flowers. A set of accurate and repeatable human judgements was sought. This is a challenging field for investigation. Things that influence human judgement can be very subtle. It is the investigator's task to provide a proper setting for these judgements. Hence, it is highly desirable to have the work evaluated in the light of learned experience in the laboratory. This will sharpen the research tool for future studies.

Two approaches were employed for this evaluation--mainly a study of the planning phase and of certain specific problems of control.

Planning Phase

The planning phase is of paramount importance. Vaguely conceived objectives provide only vague results. Varying different objectives in a "preference study" indicate a need for differing methods of analysis.

This study was a uni-product selection project. Thus the methods of analysis and presentation used were appropriate according to the study objectives [Rhodes (72)]. For a detailed discussion of the relative merits of an "M rating" correlation technique in selecting the most popular product see: Friedman (48), Brown (43), and Bliss et. al. (40), Kendall (12).

Specific Problem of Control

The following problems having to do with control were involved.

(1) Control of the setting: "Control of the setting" refers to the physical surroundings of the judge. In the previous discussion lighting was shown to have a bearing on the preference for certain colors. Therefore only that lighting which provides "neutral outdoor effect" is recommended.

(2) Control of samples: The phrase "control of the sample to be judged" refers to the condition of the samples themselves. Probably the most important problem under this

heading is the control of irrelevant characteristics of the samples. It was a serious and practical problem to maintain an "all other things being equal" condition among the samples, such as: the state of openness of the exhibited flower samples; the corresponding brightness, hue and saturation of the color, etc. This was partially responsible for the "technical limitation" claimed in Chapter IV. It was not possible to get samples of all kinds and colors submitted to the test for each experiment. This limitation might be partially overcome by introducing photographs into the consumer preference studies. There are a number of advantages to using photographs that are readily apparent [Gaarder (49)]: (1) The samples used in the study can be selected more objectively, (2) With photographs the test can be repeated, getting directly comparable results, (3) It would be possible to provide replications in order to test a respondent's consistency in two rankings of the same set of samples. The photograph approach might be desired particularly to determine preferences for non-uniform perishable items that are judged to a large extent by their surface characteristics.

Motivation of Consumer Buying and Consumer Education

Motivation of Consumer Buying

Here is a quote from the editor of the May 1961 issue of "The Economist" concerning consumers' choice. He stated

"Since the war the steadiness, not to say the voraciousness, of the buying habits of Americans--and the stability of their incomes--have done much to moderate the severity of recessions and now once more the consumer is being looked to for a sharp push toward higher levels of prosperity."

Katona (57) also pointed out that in this society so rich, fluid, and skillful, the American consumer is not satiated. He continued: "The American consumer has not become disenchanted with the installment buying plan. He has not recently elevated savings to be his principal goal in life. By and large, the American consumer still has unfilled needs and still is willing to spend or borrow to fill them."

Dichter (47) declared that there have been four major shifts in consumer thinking, strongly affecting buying attitudes: "(1) Americans are throwing off the puritanical cloak and purchasing for pleasure, without twinge of conscience; (2) they are saying, 'why should not I have this or that?' allowing emotional appeals to influence their purchase; (3) they are more mature in their buying attitudes, thinking ahead in long-range terms; (4) there is desire for individuality, self-expression and recognition." In short, they buy to satisfy psychological desires shaped by world conditions, enlightened attitudes. They are enjoying new freedoms in self-indulgence and expanding personal wants far beyond material needs.

This view derives from the Gestalt psychologists, in holding that the individual's wants always to be seen in a favorable light, and that the maintenance and enhancement of the individual is the most fundamental of all drives. Each product projects a certain image of its own in the consumers' mind. Hence the consumers, in the process of making a purchase decision, are matching the appropriate product-image to their own [Alderson (1)].

The consumer's concept of a product develops through experience and becomes reinforced in light of the meaning attached to the product itself, to the situation in which the product is used, and to the assumed reaction of the persons associated with its use.

With flowers, for instance, a decision to buy might be influenced by an individual's concept of the use of flowers for certain people, his ideas about the characteristics of flowers and his feelings toward the place of purchase. These factors help constitute the person's image of flowers and serve as a guide in the decision-making process (Early (102)). The merchandiser needs to know the consumer's concept of a product since it is this image that helps to motivate a person to desire or reject a product.

Yet, it is clear that a proper definition of the relevant attitudes will require more detailed research on the

personality level regarding the interrelations of motives, incentive, expectancy, cognition, learning, and their relation to action. This requires all the ingenuity and experience the biologist, psychologist, sociologist, and economist can bring to bear.

In short, this is a climate of attitudes, which is the basis of modern public relations. Those businessmen will thrive that create good images by adjusting to the changing public attitudes. At the same time, these businessmen need to improve themselves, since, in trying to live up to the images they project, they must change themselves to fit the image.

Consumer Education

It has been suggested that the next frontier for marketing is an inner one, the marketing of the mind and the personal development of consumers. Seeing, in the absence of a technology of consumption, most people tend to use socially approved symbols of achievement as their guides in consuming. Abroad, attempts to mimic royalty in dress and food were so strong that they called forth sumptuary legislation. In America, respect for economic power led to such widespread worship of its symbols and wasteful expenditures as to give rise to Thorstein Veblen's "conspicuous consumption" dissertation [Kelley (11)]. Hence, one of the roles of marketing

in the future may be that of encouraging increasing expenditures of both dollars and time to develop consumers intellectually, socially, and morally. Marketing, during a period of increasing leisure, may well become a significant cultural force. Marketing may provide the impetus for an improvement of consumer tastes and increase in their cognizance and appreciation of aesthetic values. That is to say the function of consumer education.

As in the floricultural marketing field, the consumer education program should not only aim to provide the consumer with a wider experience with flowers but also to introduce them to flower-appreciation.

Thus this project is looked upon not only as a benefactor to the market development program of the floral industry but also ultimately to bring enrichment to the consumers' life.

CHAPTER VII

SUMMARY

The purpose of this study was to determine consumer preferences for the following five cut flowers. The findings were presented as average percentages of the panel members selecting units for their 1st-choice.

In the text, case 1 referred to the afternoon sessions when natural day light was available and the flowers were not priced, and case 2 referred to the evening sessions when artificial lighting was used (Warm White de luxe, G.E. Tubes) in color preference tests and when the flowers were priced in number and grade preference tests.

Consumer preferences were recorded for:

(1) Carnations--

A. Color preference: The preference for individual colors was not pronounced. The modal preference was for dark pink and variegated in the "visual product" panel (In case 1: 24 per cent selected "variegated" color, 23 per cent selected dark pink, 18 per cent selected yellow, 15 per cent selected red, 12 per cent chose pink, and 11 per cent chose white; In case 2: 21 per cent chose

dark pink, 20 per cent chose variegated, 19 per cent chose white, 18 per cent chose yellow, 15 per cent chose red, and 10 per cent chose pink).

The color preference for carnations was even more diverse among the colored samples in the "write-in" panel (18 per cent of panelists for red; 16 per cent for dark pink, variegated, white, and light pink; 9 per cent for no color preference ; 5 per cent for yellow; and 4 per cent for mixed colors).

- B. Quantity (number) preference: Price (price per group) seemed to have no effect on the preference for units of five, six, and eight. The preference for units of twelve was lowered as the price increased. The preference for the small units (three and four) increased as the price increased. Units of eight were more popular than twelve in case 1: (28 per cent of panelists for units of eight, 19 per cent for units of twelve, 18 per cent for units of five, 14 per cent for units of six, 4 per cent for units of four, and 1 per cent for units of three). Units of eight was barely more popular than units of five in case 2: (27 per cent of panelists for units of eight, 26 per cent for

units of five; 12 per cent for units of six, 10 per cent for units of twelve, 9 per cent for units of four, and 2 per cent for units of three). The results in case 2 might have been modified since the units of twelve were over-priced in proportion to other units.

(2) Pom-pon chrysanthemums--

- A. Color preference: The preference for individual colors was not pronounced. Pale bronze was more popular than other colored samples but the preference for pale bronze was not pronounced. (c.f. Table 6). In the "write-in" test yellow and bronze (including light, medium, and dark shade of bronze) were more popular than "no color preference" and five other colors (26:26:19:17:4:3:3:2).
- B. Number preference: A price effect was found in the bunches that were 10" in diameter. In case 1, the modal preference of panelists was for three bunches (with 52 per cent of panelists). In case 2, the modal preference of panelists was for one bunch (with 66 per cent of panelists).
- C. Grade preference (size of the bunch): The modal preference of panelists in case 1 was for 15" bunch (with 63 per cent of panelists). The effect of

price was apparent. The 10" bunch became more popular than the 15" bunch when the flowers were priced (c.f. Table 9, case 2). Consumer grade preference compared favorably with the established practice.

(3) Standard chrysanthemums--

- A. Color preference: The preference for yellow standard mums did not appear as definite as in other similar studies conducted by the Ohio Agricultural Experiment Station (115), and Mississippi Agricultural Station (112). However yellow was more popular than white, pink, bronze, and lavender (case 1: 37 per cent of panelists preferred yellow; case 2: 41 per cent preferred yellow). In the "write-in" test, the modal preference of panelists was for yellow (with 42 per cent of panelists).
- B. Quantity (number) preference: Significant effect of pricing was found here. In case 1, the modal preference of panelists was for units of twelve (with 49 per cent of panelists). However, in case 2, units of six were more popular than units of eight, twelve, and three other purchasing-units (24:16:15:13:13:11).

(4) Gladiolus--

- A. Color preference: Preference for individual color was not pronounced. It was more or less evenly distributed among the colors. In the "write'in" panel the "no color preference" and "mixed colors" were almost equally as popular as the individual colors (17 per cent for yellow, 16 per cent for white, 16 per cent for pink, 12 per cent for no color, 12 per cent for red, 11 per cent for mixed and variegated, 5 per cent for lavender).
- B. Quantity (number) preference: Price seemed to have no effect on the preference for units of four, five, and six. In case 1 the modal preference of panelists was for units of twelve (with 50 per cent of panelists). In case 2 the units of twelve became less popular than units of six and eight but still was preferred more than two other purchasing units (24:22:13:10:9).

(5) Roses

- A. Color preference: The popularity of red roses was borne out in the results of the "write-in" panel. Fifty eight per cent of those surveyed singled out the red rose (both dark red and Better Times red) as the favorite colored rose. However in the "visual product" study, the preference for red

roses appeared less definite than in the "write-in" test. Dark red was more popular than pale lavender (variety Sterling-Silver) and four other colors in both case 1 and 2 (case 1: 33 per cent of panelists preferred dark red; case 2: 28 per cent of panelists preferred dark red). Although pale lavender had a relatively high percentage in first preference it also showed a strong negative attitude exhibited by a great number of panel members (c.f. Table 19 Distribution of frequencies of preference). This color was the preferred color for some people, and the least preferred for many others. The variety Better Times was used as the sample for red roses. It was not considered to be a superior variety among the red rose varieties although the quality of the sample of Better times was competitive to other colored samples.

B. Quantity (number) preference: No price-effect in the 9" (except the units of three) and 12" roses was noted. The quantity preference in all grades was quite evenly distributed among the testing unit-samples. Pricing had no effect on the preference scores in units of three, five, or seven in 15" roses. However, it seemed to increase

the preference for units of twelve and conversely lowered the preference for units of nine. The units of twelve were more popular than seven, five, three, and nine in case 2 (26:22:22:16:14).

C. Grade preference (stem-length): Better Times Roses with 15" stem were more popular than those with 12" stems in case 1 (38:26:12:10), the 12" roses were more popular than 15" in case 2 (32:29:16:11). Twenty-one roses ranked low in preference . The 9" roses were not so popular as the 12" and 15".

BIBLIOGRAPHY

Books

1. Alderson, W. Marketing Behavior and Executive Action. Homewood, Ill.: Richard D. Irwin, Inc., 1957.
2. Atkinson, J. (ed.) The Assessment of Human Motives. New York: Dvan Nostrand Co., 1958.
3. Beckman, T.N. and W.R. Davidson. Marketing. 7th ed. New York: The Ronald Press Co. 1962.
4. Cambell, P. The Consumer Interest, A Study in Consumer Economics. New York: Harper & Brothers, Pub., 1949.
5. Churchman, C. W., R. L. Ackoff, and M. Wax. Measurement of Consumer Interest. Phil., Pa.: U. of Penn. Press, 1947.
6. Clark, L. H. Consumer Behavior. Vol. 3. New York: Harper & Brothers. 1958.
7. Clements, F. and T. Meyers. "How They Tell What We Want." Yearbook of Agriculture. United States Department of Agriculture, Washington, D. C., 1954, pp. 207-211.
8. Gordon, L. J. The function of the consumer in a free choice economy. The Kazanjian Foundation Lectures 1957. Westport, Conn: The Calvin K. Kazanjian Economics Foundation, Inc., 1958.
9. Henell, O. Marketing Aspects of Housewives' Knowledge of Goods. The Institute for Marketing and management Research, 1953.
10. Katona, G. The Powerful Consumer. Psychological Studies of the American Economy. New York: McGraw-Hill Book Co., Inc., 1960.

11. Kelley, P. C. Consumer Economics. Homewood, Ill.: Richard D. Irwin, Inc. 1953.
12. Kendall, M. G. The Problems of M Rankings. 2nd. ed. New York: Hafner Publishing Co., 1955.
13. Lazer, W. and E. J. Kelley. Managerial Marketing: Perspectives and Viewpoints. Rev. Ed. Homewood, Ill.: Richard D. Irwin, Inc. 1962.
14. Leonhard, D. Consumer Research with Projective Techniques. Henandoah, Iowa: World Publishing Co., 1955.
15. Liesveld, J. H. The Retail Florist. New York: the Macmillan Co., 1954.
16. Little, Arthur D., Inc. Flavor Research and Food Acceptance. New York: Reinhold Publishing Corp., 1958.
17. Luck, D. S., H. G. Wales, and D. A. Taylor. Marketing Research. 2nd. ed. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1961.
18. Myrdal, G., R. Sterner, and A. Rose. An American Dilemma, The Negro Problem and Modern Democracy. New York: Harper and Brothers, Pub., 1944, pp. 1027-1064.
19. Post, K. Florist Crop Production and Marketing. New York: Harper & Brothers, 1960.
20. Siegel, S. Nonparametric Statistics--for the Behavior Science. New York: McGraw-Hill Book Co., Inc., 1956.
21. Thorndike, E. L. (ed.) The Psychology of Wants, Interest, and Attitudes. New York: D. Appleton-Century Crafts, Inc., 1959.
22. Wallich, H. C. The Cost of Freedom. New York: Harper & Brothers, 1960.
23. Wolf, H. A., W. G. Jennings, W. N. Jones, L. W. Latimer, B. J. Rothwell, II, R. F. Vancil. Motivation Research. Boston, Mass.: Motivation Research Associates, 1955.

Periodicals

24. Abrahamsen, M. "Determining consumer preferences for sweet potatoes: methods and results." Journal of Farm Economy. Vol. 31, Part I, 1949, pp. 635-639.
25. Alderson, W. "Psychology for Marketing and Economics." Journal of Marketing. Vol. 17, No. 2, Oct. 1952, pp. 119-35.
26. Anderson, R. L. "Use of Contingency Tables in the Analysis of Consumer Preference Studies." Biometrics. Dec. 1959, pp. 582-90.
27. Anon. "Consumer panels as a marketing tool." Printer's Ink. Vol. 213, Nov. 9, 1945, pp. 25, 318, 140.
28. Anon. "Consumers' Choice." The Economist. Vol. 199, May 13, 1961, pp. 676.
29. Anon. "People: What's Behind Their Choices in Buying, in Working." Businessweek. Aug. 14 (Part I: 50-61), Aug. 21 (Part II: 130-143), Aug. 28 (Part III: 119-), 1954.
30. Anon. "The 'I am me' consumer." Businessweek. Dec. Dec. 23, 1961, pp. 38-9.
31. Applebaum, W. "Studying customer behavior in retail stores." Journal of Marketing. Vol. 16, Oct. 1951, pp. 172-78.
32. Baker, D. J. and C. H. Berry. "The price elasticity of demand for fluid skin milk." Journal of Farm Economics. Vol. 35, Feb. 1953, pp. 124-29.
33. Bayton, J. A. "Consumer preference research in the Department of Agriculture." Agricultural Economic Research. Vol. II, No. 4. Oct. 1950, pp. 105-112.
34. Bayton, J. A. "Motivation, cognition, learning basic factors in consumer behavior." Journal of Marketing. Vol. 22, Jan. 1958, pp. 282-89.
35. Benson, P. H. "A model for the analysis of consumer preference and an exploratory test." Journal of Applied Psychology. Vol. 39, No. 5, Oct. 1955, pp. 375-81.

36. Benson, P. H. "A Psychometric Approach to Predicting Consumer Preference." Personnel Psychology. Vol. 13, 1960, pp. 71-80.
37. Bilkey, W. J. "A psychological approach to consumer behavior analysis." Journal of Marketing. Vol. 18, No. 1, July 1953, pp. 18-25.
38. Bland, F. E. "Effectiveness of education programs on meat consumption." Georgia Agricultural Research. Ag. Exp. Sta., Ga. St. U. Vol. 3, No. 4, Spring 1962, pp. 8-10.
39. Blanenship, A. B. "Creativity in consumer Research." Journal of Marketing. Vol. 25, Oct. 1962, pp. 34-38.
40. Bliss, C. I., M. L. Greenwood, and M. H. McKenrick. "A comparison of scoring methods of taste tests with mealiness of potatoes." Food Technology. Vol. 7, 1953, pp. 491-95.
41. Boddewyn, J. "Galbraith's Wicked Wants." Journal of Marketing. Vol. 25, Oct. 1961, pp. 14-18.
42. Bradley, R. A. "Some Statistical Methods in Taste Testing and Equality Evaluation." Biometrics. Vol. 9, Part I, 1953, pp. 22-38.
43. Brown, G. H. "Measuring consumer attitudes toward products." Journal of Marketing. Vol. 14, Apr. 1950. pp. 691-98.
44. Bryant, W. and J. Swingen. "Flowers . . . something new for self-service--prepackaged." Pre-Pack-Age. May 1948, pp. 15, 18-21, 22.
45. Burrows, G. L. "Consumer Acceptance or Consumer Preference." Agricultural Economic Research. Vol. 4, Apr. 1952. pp. 52-56.
46. Dedolph, R. R. and H. E. Larzelere. "Tomatoes-color development and consumer preference." Quarterly Bulletin. Agricultural Experiment Station, Michigan State University. Vol. 45, No. 2, Aug. 1961, pp. 219-222.

47. Dichter, E. A. "What Are the Real Reasons People Buy To-day?" Sales Management. Feb. 1 (Part I: 36-38, 86-89), Feb. 15 (Part II: 46-55), 1955.
48. Friedman, M. "A comparison of alternative tests significance for the problem of M rankings." Annual Mathematic Statistic. Vol. 11, 1940, pp. 86-92.
49. Gaarder, R. O. and N. V. Strand. "Use of photographs in consumer preference studies of pork." Journal of Farm Economics. Vol. 39, Feb. 1957, pp. 59-66.
50. Grange, G. W. "An experiment study of colour preferences." Journal Genetic Psychology. Vol. 52, 1955, pp. 3-20.
51. Grattan, C. H. "The Complex World of the Consumer." Consumer Reports. Vol. 20, Aug. 1955, pp. 384-5.
52. Greig, W. S., E. L. Bedford, and H. Larzelere. "Consumer preferences among apple varieties in fresh and processed forms." Quarterly Bulletin. Agricultural Experiment Station, Michigan State University. Vol. 44, No. 3, Feb. 1962, pp. 505-526.
53. Guilford, J. P. and P. Smith. "A system of color preferences." American Journal Psychology. Vol. 72, Dec. 1959, pp. 487-502.
54. Hansen, N. J. and I. I. Holland. "A consumer preferences study of charcoal." Iowa State Journal of Science. Vol. 34, No. 4, May, 1960, pp. 709-712.
55. Howell, L. D. "Some phases of consumer preference and demand research." Journal of Farm Economy. Vol. 36, Nov. 1954, pp. 641-653.
56. John, M. E. "Classification of values that serve as motivators to consumer purchases." Journal of Farm Economy. Vol. 38, Nov. 1956, pp. 956-63.
57. Katona, G. "Have consumers stopped wanting?" Printers' Ink. Feb. 17, 1961, pp. 20, 22, 24, 26.
58. Krugman, H. B. "The learning of consumer preference." Journal of Marketing. Vol. 26, No. 2, Apr. 1962, p. 31.

59. Kuehn, A. A. and R. L. Day. "Strategy of product quality." Harvard Business Review. Vol. 40, Nov. 1962, pp. 100-110.
60. Larzelere, H. B. and R. R. DeDolph. "Consumer acceptance of greenhouse-grown and southern field-grown tomatoes." Quarterly Bulletin. Agricultural Experiment Station, Michigan State University. Vol. 44, No. 3, pp. 554-558.
61. Larzelere, H. E. and R. D. Gibb. "Consumers' opinions of quality in pork chops." Quarterly Bulletin. Agricultural Experiment Station, Michigan State University. Vol. 39, No. 2, Nov. 1956, pp. 327-333.
62. Lesly, P. "The new consumer who thinks for himself." Sales Marketing. Vol. 84, Mr. 18, 1960, pp. 33, 130, 132
63. Martineau, P. D. "Martineau presents fresh rebuttal to critics' charges of waste, obsolescence in U.S. Economic system." Journal of Marketing. Vol. 26, No. 1, Jan. 1962, pp. 27.
64. Matson, Ed. and P. Krone. "Per Capita Sales Vary in Eight Cities." Michigan Florist. No. 247, Nov. 1951, pp. 9-21.
65. McCormick, E. J., R. E. Blanchard, and G. G. Karas. "The effect of hue, brightness and saturation on color preference considering various contexts." Proceedings Indiana Academy Science. Vol. 67, 1957, p. 297.
66. Mills, W. C., Jr., L. E. Dawson and H. E. Larzelere. "Consumer preferences for turkeys with various grade labels." Quarterly Bulletin. Agricultural Experiment Station, Michigan State University. Vol. 43, No. 2, pp. 249-260.
67. Newman, P. "Basic Assumptions in Preference Theory." Economic Journal, Vol. 71, Sept. 1961, pp. 535-538.
68. Pasto, T. A., and P. Kivisto. "Group differences in color choice and rejection." Journal of Clinical Psychology. Vol. 12, 1956, pp. 379-81.

69. Peryam, D. R. and N. J. Gutman. "Variation in Preference Ratings for Food Served at Meals." Food Technology. Vol. 12, Jan. 1958, pp. 30-33.
70. Politz, A. and W. E. Deming. "On the necessity to present consumer preferences as predictions." The Journal of Marketing. Vol. 18, No. 1, July, 1953, pp. 1-5.
71. Releigh, T. "Consumer motivation study advises special occasion rose marketing." Florist Exchange & Horticulture Trade World. Je. 28, 1958, pp. 9,29.
72. Rhodes, V. J. "The Measurement of Consumer Preferences." Journal of Farm Economics. Vol. 37, Nov. 1955, pp. 638-51.
73. Rhodes, V. J. "The variability of consumer preferences." Journal of Farm Economics. Vol. 41, Aug. 1959, pp. 519-27.
74. Riesen, A. H. "The role of light and color in psychobiology." Acta Psychologica. Vol. 11, 1955, pp. 221-22.
75. Sanders, C. L. "Color Preferences for Natural Objects." Engineering. Vol. 54, July 1959, pp. 452-56.
76. Shaffer, J. D. "Some observations concerning the relationship of consumer research to consumer education." Journal of Farm Economy. Vol. 34, No. 4, Nov. 1952, pp. 551-55.
77. Sobol, M. G. "Panel mortality and panel bias." Journal of American Statistic Association. Vol. 54, No. 285, 1959, pp. 52-68.
78. Southworth, H. M. "Progress in developing a set of principles in the area of consumer behavior." Journal of Farm Economy. Vol. 36, Dec. 1954, pp. 1071-82.
79. Stonborough, T. H. W. "Fixed Panels in consumer research." Journal of Marketing. Vol. 7, Oct. 1942, pp. 129-138

80. Thurstone, L. L. "A law of Comparative Judgment." Psychology Review. Vol. 34, 1927, pp. 273-286.
81. Thurstone, L. L. "The indifference function." Journal of Social Psychology. Vol. 2, May 1931, pp. 139-167.
82. Thurstone, L. L. "Experiment Methods in Food Testing." Journal of Applied Psychology. Vol. 35, No. 3, Je. 1951, pp. 141-45.
83. Tobin, B. F. "Consumer preferences are key to marketing trends." The U. S. Egg and Poultry. Vol. 54, No. 9, Sept. 1948, pp. 12-13, 26-28.
84. Von Oppenfeld, H. "Michigan Floricultural Production." Quarterly Bulletin. Agricultural Experiment Station, Michigan State College. Vol. 37 (No. 1), Aug. 1954, pp. 35-51.
85. Von Oppenfeld, H. "Retail Distribution of floricultural crops in Michigan." Quarterly Bulletin. Agricultural Experiment Station, Michigan State College, E. Lansing, Michigan. Vol. 37 (No. 1), Aug. 1954, pp. 52-59.
86. White, I. S. "The functions of advertising in our culture." Journal of Marketing. Vol. 24, Jl. 1959, pp. 8-14.

Bulletins

87. Anon. "A social profile of Detroit: 1955." Detroit Area Study, The University of Michigan, Survey Research Center, Institute for Social Research, 1956, pp. 1-46.
88. Anon. "Citrus preferences among household consumers in Louisville and in Nelson County, Kentucky." United States Bureau of Agriculture Economics, Washington, D. C., Ag. Inf. Bul. No. 2, 1950.
89. Anon. "Consumer preferences for frozen peas in relation to standards for grades." United States Department of Agriculture, Washington, D. C., Mktg. Res. Rept. No. 280, 1958.

90. Anon. "Potato preferences among household consumers." United States Department of Agriculture, Washington, D. C., Misc. Publ. No. 667, 1948.
91. Anon. Report of the Definition Committee of the American Marketing Association, published by the Association, Chicago, 1961.
92. Anon. "Women's preferences among selected textile products." United States Department of Agriculture, Washington, D. C., Misc. Publ. No. 641, 1947.
93. Bell, H. P. "Preferences for Canned Grapefruit Juices." United States Department of Agriculture, Washington, D. C., Mktg. Res. Rept. No. 108, 1955.
94. Bliss, C. I., E. O. Anderson, and R. E. Marland. "A technique for testing consumer preferences, with special reference to the constituents of ice cream." Conn. (Storrs) Ag. Exp. Sta., Bul. 251, 1943.
95. Branson, R. E., M. Jacobs, and R. Hall. "Frozen grapefruit sections; evaluating a new product by retail sales audit and household survey." United States Department of Agriculture, Washington, D. C., Mktg. Res. Rept. No. 110, 1955.
96. Bunk, M. E. and R. N. Hampton. "Problems in selling prepackaged roses in grocery supermarkets and variety stores." Cornell U., Ag. Exp. Sta. Ithaca, N. Y., A. E. 930, Oct. 1953.
97. Burrell, H. "The aqua-pak--a new package for selling flowers." Cornell U., Ag. Exp. Sta. Ithaca, N. Y., A. E. 1060, Ap. 1957.
98. Crosby, G. and A. L. Larson. "Relationship of Oklahoma Livestock Producers Stated Marketing Preferences to Marketing Behavior." Okla. St. U. Exp. Sta., Processed Service p. 356, Jl. 1960.
99. Deloach, D. B. "The cut flower industry: an analysis of its growth potential." Calif. Ag. Exp. Sta., mime. Rept. No. 214, Ja. 1959.

100. Dewey, A. "Retail demands for floricultural products." "U. of Conn. Exp. Sta., College of Ag., Bul. 343, Apr. 1959.
101. Dwoskin, P. B. and M. Jacobs. "Potato flakes, a new form of dehydrated mashed potatoes; market position and consumer acceptance in Binghamton, Endicott, and Johnson City, New York." United States Department of Agriculture, Washington, D. C., Mktg. Res. Rept. No. 186, 1957.
102. Early, J. W. "The sale of flowers . . . preference factors and merchandising methods." Penn. Ag. Exp. Sta., A. E. & R. S. 16, Je. 1958.
103. Early, J. and C. E. Trotter. "Consumer preferences for floral products." Penn. Ag. Exp. Sta., Prog. Rept. 143, Jan. 1956.
104. Fossum, M. T. "Floricultural and ornamental horticultural economics." Society of American Florists and Ornamental Horticulturists, 1950.
105. Fossum, M. T. "Trade in horticultural specialties 1890-1950." United States Department of Agriculture, Ag. Mktg. Serv., Washington, D. C., Mktg. Res. Rept. No. 33, May, 1957.
106. Hampton, R. N. "Merchandising flowers in retail florist shops." Cornell U. Ag. Exp. St., Ithaca, N. Y., A. E. 1004, Oct. 1955.
107. Hampton, R. N. and J. L. Kupka. "Problems in retail pricing and packaging of flowers--for sale in self service outlets." Cornell U., Ag. Exp. Sta. Ithaca, N. Y., A. E. 1003, Oct. 1955.
108. Jasper, A. W. "Some highlights from consumer egg studies." United States Department of Agriculture, Washington, D. C. Inf. Bul. No. 110, 1953.
109. Jasper, A. W. and R. E. Cray. "Consumer Preferences, Practices and Demands in Purchasing Eggs and Poultry in Columbus, Ohio, 1950." Ohio Ag. Exp. Sta. Res., Bul. 736, Oct. 1953

110. Kelly, R. A. "Floricultural sales in mass market outlets." U. of Ill. Ag. Exp. Sta., Bul. 675, Aug. 1961.
111. Knight, W. R. "An attempt to determine the effects of advertising and other factors on florists' sales." Mich. St. College, Dept. of Ag. Econ., July, 1952.
112. LeClerg, R. E. "Consumer preference for cut flowers and pot plants in Mississippi." Miss. Ag. Exp. Sta., Bul. 565, Sept. 1958.
113. Schuyler, F. O., R. B. Miner, J. D. Long, and W. O. Yoder. "Orientation to business research." Indiana University, Indiana Readings in Business, No. 12, 1956.
114. Sherman, R. W. and M. Baker. "Sale of potted plants and cut flowers through supermarkets." Ohio Ag. Exp. Sta., A. E. 336, 1961.
115. Sherman, R. W., D. C. Kiplinger, and H. E. Williams. "Consumer preferences for cut roses, carnations, and chrysanthemums." Ohio Ag. Exp. Sta., Res. Cir. 31, Mar. 1956.
116. Sorensen, H. B., A. F. Dewerth, and E. R. Jensen. "Production methods and new markets for Texas florist crops." Texas Ag. Exp. Sta., Bul. 900, Ap. 1958.
117. Sorensen, H. B., R. E. Odom and A. F. DeWerth. "Consumer preference for flowers and ornamental plants." Texas Ag. Exp. Sta., MP-489, Feb. 1961.
118. Trotter, W. K. "Problems in marketing florist crop." Cornell University Agricultural Experiment Station, Ithaca, N. Y., A. E. 983, Je. 1955.
119. Von Oppenfeld, H. "A study of the retail florist business." Cornell U., Dept. of Ag. Econ., A. E. 764, Jan. 1951.
120. Von Oppenfeld, H., J. F. Schwartz, and P. R. Krone. "Merchandising in retail flower shop." Mich. Ag. Exp. Sta. Spec., Bul. 412, Apr. 1957.

121. Wilson, R. F. Horticultural Colour Chart. The British Colour Council in collaboration with The Royal Horticultural Society. 1938.

Unpublished Material

122. Early, J. W. "Consumer Attitude and Preferences for Floral Products." Unpublished M. S. Thesis, Graduate School of Pennsylvania State University, 1956.
123. Rhodes, V. J. "A Theoretical and Empirical Investigation of Consumer Preferences for Beef by Grades in Metropolitan St. Louis." Unpublished Ph.D. Thesis. Graduate School of Harvard University, 1955.
124. Shaffer, J. D. "Methodological Basis for the Operation of a Consumer Purchase Panel." Unpublished Ph.D. Thesis, Graduate School of Michigan State College, 1952.
125. Tolle, L. J., Jr. "Strategy considerations in Changing the Retail Outlet for Floral Products." Memo, undated.

Speeches

126. Tolle, L. J., Jr. "Projections for Floriculture." A speech presented at the wholesalers session, Mich. St. Florist Assn. meeting, Detroit on Feb. 21, 1961.
127. Voigt, A. O. "Marketing of Flowers and Ornamentals." A report to the Horticultural Agindustry Conference, Penn. St. U. on May 4, 1961.

Miscellaneous

128. Anon. "Census of Agriculture, Special Reports, Horticultural Specialties." Vol. V, Part I, Bureau of Census, Washington, D. C., 1950, pp. 33-37, 429-433, 733, 755.

129. Anon. "Census of Agriculture, Special Reports, Horticultural Specialties." Vol. V, Part I. Bureau of Census, Washington, D. C., 1959, pp. 26-27, 45-49, 109-111, 158, 168, 175.
130. Anon. "Census of Business, Retail Trade--Sales Sizes." Bureau of Census, Washington, D. C., 1958, pp. 2-35.
131. Anon. "Cut Flowers, Production & Sales." Statistical Reporting Service, Crop Reporting Service, Crop Reporting Board, Washington, D. C., 1958-59, Intentions for 1960 in Ten Selected States.

APPENDIX 1

MICHIGAN STATE UNIVERSITY EAST LANSING

DEPARTMENT OF AGRICULTURAL ECONOMICS

Dear Homemaker:

We at Michigan State University are carrying on a research project to help the food industry produce, process and sell the quality of various food products that you as a consumer prefer. We are doing this by having groups of interested consumers come to a display room arranged in Detroit with the cooperation of Wayne State University.

We will make a list of all those who indicate on the enclosed questionnaire that they are willing to take part in the study. From this list we will select the names of a number of people to visit the display room. We are asking questions about your age, education, and income so that we can get a better idea of family characteristics in Detroit. This information in turn will make our research results more applicable to a large number of families in the city of Detroit.

If you are one of those chosen, we hope that you can come to the display room and give us your opinion of various samples of eggs, poultry, apples, potatoes and other products. We feel sure the visit will be most interesting to you. Furthermore, you will be helping to improve the general market quality and grades of these products.

Very truly yours,

Henry E Larzelere
Associate Professor in
Agricultural Economics

HEL:jds

P.S. Please fill out the questionnaire and send it back whether or not you are able to take part.

H.E.L.

First of all, how many persons are there in your household? That is, how many eat their meals regularly in your home? 1. _____

What are the approximate ages of the heads of your household? Please check the one which fits best.

2. Female head
() a. Under 30
() b. 31-45
() c. 46-60
() d. Over 60

3. Male head
() a. Under 30
() b. 31-45
() c. 46-60
() d. Over 60

About how many years of formal education were completed?

4. By the female head
() a. 0-8 years
() b. 9-11 years
() c. 12-13 years
() d. 14 or more

5. By the male head
() a. 0-8 years
() b. 9-11 years
() c. 12-13 years
() d. 14 or more

How many members of your household are employed more than one-third of the time outside of home? 6. _____

About what is the total yearly income of all members of your household from all sources after federal income taxes were deducted? Please check the category below which fits your best estimate.

7. () a. Under \$2,000
() b. 2,000-4,000
() c. 4,001-5,400

- () d. 5,401-7,000
() e. 7,001-10,000
() f. 10,000 & over

8. Who does most of the food buying for your family? (Check one)

Male
head

Female
head

Both

Other

9. How often do you usually purchase these items? (Check one in each column)

	Eggs	Chicken fryers	Processed Apples	Potatoes	Lamb	Turkey
Once a week	_____	_____	_____	_____	_____	_____
Once in 2 weeks	_____	_____	_____	_____	_____	_____
Once a month	_____	_____	_____	_____	_____	_____
Once a year	_____	_____	_____	_____	_____	_____
Never	_____	_____	_____	_____	_____	_____

If you are selected would you be willing to visit our display room at a time that is convenient for both of us? _____

Name _____ Phone No. _____

Address _____

_____ Thank you for your help.

APPENDIX 2

MICHIGAN STATE UNIVERSITY East Lansing

College of Agriculture • Department of Horticulture

November 12, 1962

Dear Sir:

My name is Linda Han. I am a graduate student studying Floriculture Marketing at Michigan State University. We are conducting a research project studying consumer preferences in cut flowers and the resulting effect of super market sales on retail florist businesses. By so doing, we hope to gain more knowledge about your customers' preferences for cut flowers in retail florist shops as opposed to mass market outlets. When we have summarized this information, we will send a copy to you, if you request it. Your answer will be treated in the strictest confidence. I am sure you will find direct benefits to your business by the knowledge gained.

We are asking you to help us to check our "laboratory test" data with your actual sales records. Please fill out all the blanks in the enclosed questionnaire sheets using your best judgment and with the assistance of your records. We shall compare your replies and the laboratory test results and see if there is any deviation between them. If there is a material difference, then we shall study in which ways these two sources of information differ.

You have been chosen for this particular study, because you are operating the very sort of business which is desirable for this particular study. We sincerely thank you for your cooperation and hope to hear from you within 10 days.

Very truly yours,

Linda Han

Linda Han

Enc.

General Information

1. My business is: (check one)

Retail _____
 Retail-grower _____

2. My last-year sales volume (\$) is between:

30,000-or-less _____
 31,000- 60,000 _____
 61,000- 90,000 _____
 91,000-120,000 _____
 121,000-150,000 _____
 151,000-or-more _____

3. What is the size of your trading area (approximate population)? Check one.

4,999-or-less _____
 5,000- 14,999 _____
 15,000- 29,999 _____
 30,000- 59,999 _____
 60,000-119,000 _____
 120,000-239,999 _____
 240,000-449,999 _____
 500,000-or-more _____

4. Location of my store is: (check one)

Roadside _____
 Neighborhood shopping district _____
 Shopping center _____
 Central shopping district (down-town) _____

5. My store is near: (check those which apply)

Hospital _____
 Cemetery _____
 Shopping center _____
 Office building _____
 School (university) _____
 Highway _____
 Other traffic causing feature (specify) _____

6. Do you operate a greenhouse? Yes _____ No _____

7. Do you offer cash-and-carry specials--either unarranged cut flower and/or small plants? Yes _____ No _____

If so, how often? (check one)

Daily _____
 Once a week _____
 Once a month _____
 Holidays _____
 Other (specify) _____

8. Estimate the percentage of customer's orders placed by:

Telephone _____ %
 In person _____ %

9. Of orders placed in person, the items most frequently (number of sales) bought are: (check one)
- Arrangement of cut flowers _____
- Potted flowering plants _____
- Foliage plants _____
- Giftware _____
10. When your customers specify a type of cut flower (loose, wrapped, or boxed only), what types most frequently are requested? Estimate in percentage of their dollar-value importance.

Carnation _____%

Gladiolus _____%

Mum (Std.) _____%

Orchid _____%

Pompon _____%

Rose _____%

Snapdragon _____%

Other cut flowers _____%

11. Approximately what is the sales volume of each of the following kind of cut flowers (made-up and loose cut flowers) in your total business sales volume? (by percentage of the dollar value)

Roses _____%

Mums _____%

Carnations _____%

Gladiolus _____%

Pompons _____%

All other flowers _____%

12. What are the price ranges you offer for the following cut flowers (only the loose flowers-boxed or bunched)?

Roses _____/doz.

Mums _____/doz.

Pompons _____/10" bu.

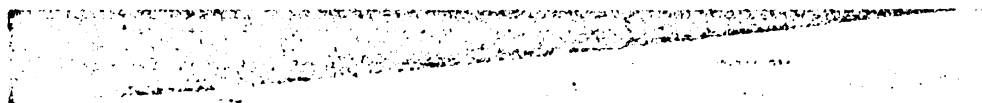
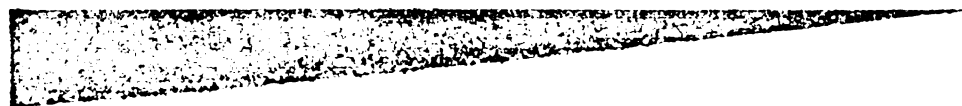
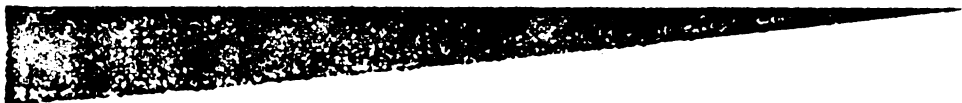
Carnations _____/doz.

Gladiolus _____/doz.

Customer Preferences

1. Estimate the percentage of your business (in number of sales) coming from the following sources for each type of cut flowers. (on annual basis)

	Rose	Carnation	Mum(std.)	Pompon	Gladiolus
Funeral & grave	_____	_____	_____	_____	_____
Hospital	_____	_____	_____	_____	_____
Wedding	_____	_____	_____	_____	_____
Commercial or	_____	_____	_____	_____	_____
indus. decoration	_____	_____	_____	_____	_____
Birthday	_____	_____	_____	_____	_____
Anniversary	_____	_____	_____	_____	_____
Every-day use	_____	_____	_____	_____	_____
Other occasions	_____	_____	_____	_____	_____



2. Estimate in percentage, how often do your customers specify each following colors of roses.

No color specified	_____	%
Better Times	_____	%
Dark red	_____	%
Yellow	_____	%
Pink	_____	%
Other (specify)	_____	%
Mixed color	_____	%

3. Estimate in percentage, how often do your customers specify each following colors of carnations.

No color specified	_____	%
Red	_____	%
Novelty	_____	%
Light pink	_____	%
Dark Pink	_____	%
White	_____	%
Yellow	_____	%
Other (specify)	_____	%
Mixed color	_____	%

4. Estimate in percentage, how often do your customers specify each following colors of pompons.

No color specified	_____	%
White	_____	%
Dark Lavender	_____	%
Lavender	_____	%
Dark bronze	_____	%
Pale bronze	_____	%
Yellow	_____	%
Other (specify)	_____	%
Mixed color	_____	%

5. Estimate in percentage, how often do your customers specify each following colors of gladiolus.

No color specified	_____	%
Lavender	_____	%
Red	_____	%
Novelty	_____	%
White	_____	%
Yellow	_____	%
Other (specify)	_____	%
Mixed color	_____	%

6. Estimate in percentage, how often do your customers specify each following colors of mum (Std.).

No color preference	_____	%
Yellow	_____	%
Lavender	_____	%
Pink	_____	%
White	_____	%
Bronze	_____	%
Other (specify)	_____	%
Mixed color	_____	%

Size of Units purchase

1. The percentage of roses sold in the following units-of-purchase is:

3 flowers-or-less	_____	%
4 flowers	_____	%
5 flowers	_____	%
6 flowers	_____	%
7-11 flowers	_____	%
doz.-or-more	_____	%

2. The percentage of mums (std.) sold in the following units-of-purchase is:

3 flowers-or-less	_____	%
4 flowers	_____	%
5 flowers	_____	%
6 flowers	_____	%
7-11 flowers	_____	%
doz.-or-more	_____	%

3. The percentage of pompons sold in the following units-of-purchase is:

one bu. (10")	_____	%
two bu. (10")	_____	%
three-or-more bu. (10")	_____	%

4. The percentage of carnations sold in the following units-of-purchase is:

3 flowers-or-less	_____	%
4 flowers	_____	%
5 flowers	_____	%
6 flowers	_____	%
7-11 flowers	_____	%
doz.-or-more	_____	%

5. The percentage of gladiolus sold in the following units-or-purchase is:

3 flowers-or-less	_____	%
4 flowers	_____	%
5 flowers	_____	%
6 flowers	_____	%
7-11 flowers	_____	%

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