



The Hawaiian Nursery and Related Landscape Industry



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SUMMARY OF KEY POINTS

1. The nursery and closely related landscape service industry in Hawaii increased its gross revenue from about \$2,500,000 to \$4,100,000 during the years 1959-1964. It was further estimated that by 1970 the annual gross revenue for the industry will be about \$6,000,000.
2. There were 47 firms included in this study. Out of this group 23 were classified as retailing operations, 12 were producer operations, and 12 were classified as landscape service firms.
3. Twenty firms out of the 47 were selected as bench mark^{1/} firms. These were operational for the whole of the 6 years studied, and for the most part were able to supply adequate data for estimating purposes. It was estimated from the available data that the 20 bench mark firms did approximately 80 percent of the total business in the City and County of Honolulu over the 6 years.
4. Annual rates of growth for the industry were calculated at 6.4 percent for the bench mark firms and 5.3 percent for all the other firms studied.
5. There was no strong seasonal characteristic in the sale of plant material, landscape services or for other product sales.
6. Population increases accounted for the bulk of sales increases over the 6 years studied. Per capita sales did not change materially when these were deflated to 1964 dollar values. On the average, individuals spend about \$8.75 for industry goods and services. Per capita income changes did not affect spending significantly.

^{1/} Firms used as the basis for projection to 1970 and for which data were available both in the 1962 and the 1964 surveys.

RECOMMENDATIONS

1. The industry should organize to secure certain economic and operational efficiencies currently not available to the industry. Included in the purposes for organization should be:
 - a. The development of industry-wide grades and standards for both products and services.
 - b. The initiation and development of intra-industry information sources, including product availability, price statistics, and any other significant data suitable for increasing understanding by the industry and consuming public.
 - c. The development of an industry-wide consumer education program designed to increase the demand for nursery and landscape goods and services.
 - d. The initiation and development of intra-industry service activities. A minimum effort at the start might be to coordinate with public agencies a program for employee education.
 - e. The initiation and development of central procurement (consolidated wholesale) for slow-moving retail items.

2. The industry should organize to secure certain noneconomic benefits currently not available to the industry. Included should be:
 - a. Intra-industry education programs designed to improve industry relationships with the community, and particularly as this may affect the initiation and development of industry standards.
 - b. Programs in support of continued research and development at all levels of the industry. These should include activities designed to improve inter-agency cooperation in attending to economic, biological, and physical research requirements of the industry.
 - c. Activities designed to improve the legal and legislative environment in which the industry functions.

THE HAWAIIAN NURSERY AND RELATED LANDSCAPE INDUSTRY

Edmund R. Barmettler^{2/} and Pattur R. J. Prasad^{3/}

INTRODUCTION

What are the potentials for growth and development of the Hawaiian nursery and closely related landscape industry? What is the current importance of the industry in the economy, and how important is the industry likely to be in the years just ahead? These are questions posed to the University of Hawaii's Agricultural Experiment Station in late 1962.

In an attempt to answer these questions, a study was initiated to try to prognosticate the industry's future. It was accepted at the outset that even with good industry cooperation, outlook work, at its best, is subject to the vagaries of the unknown locked into the future and to the quality and quantity of the available statistical and record data.

The Hawaiian nursery and related landscape industry evolved out of a sort of backyard or sideline small business activity. Many of the currently successful firms apparently started a backyard or as sideline operations. In other instances, nursery products were added to the sales line of general retailers and continue today as part of general merchandise and service diversification of these firms. In still other instances, nurserymen have taken on landscape service activities as a means for surviving in Hawaii's highly competitive nursery enterprise.

The competitive pressure on the Hawaiian nursery crop producer or retailer comes from several sources, but perhaps the most telling pressure comes from the small-lot producer who may move occasional plants into the market in direct competition with established retail nursery outlets. Perhaps equally or the even more important influence on the industry is the Hawaiian environment itself, which is such that plant materials of a wide variety are available throughout the year. The fact that many things are easily grown means that all sorts of plant products which never enter the normal retail sales channels are exchanged between householders. From observation and interpretation of the results secured from study of the nursery industry over 6 years, it appears that Hawaii's nursery products industry (insofar as plant materials are concerned) functions primarily to introduce new varieties of plant products into the Hawaiian home garden. Sales of nonplant materials at the retail level far outweighed the plant product sales as indicated in this publication. Similarly it is evident that a considerable volume of plant materials is received from nonformal sales channels when the volume of total plant product sales of commercial nursery producers is considered.

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There are many questions about the nursery and related landscape industry left unanswered by this research. It was evident throughout the study period that an important factor in current and future development has to do with change occurring outside the control of the industry. This would be true even if the industry were ideally organized and coordinated to meet its potential market opportunities--which it is not. Included in these noncontrollables are the changes occurring in the market such as population growth, housing development, disposable income, and the natural environment itself, as these have an impact upon the growth and development potential of the nursery and related landscape industry.

In the areas where producers have some control, there are also many questions left unanswered. The problems related to firm efficiencies in production, organization, operation, and merchandising of goods and services are not measured. This industry, it could be rightly said, does not currently benefit from the knowledge and understanding which might accrue to it through a program of well-financed research. The industry is currently finding an increasing need for better understanding of itself as an industry and of its part as firms. Some of the issues and problems as visualized by the industry are also presented.

THE STUDY--WHAT WAS ITS INTENT? AND WHAT WAS ACCOMPLISHED

The Purpose of the Study

The intent of this study was to accomplish the following objectives:

1. To examine the present volume of business conducted by the Hawaiian nursery and related landscape industry with the view of segmenting the gross income of the industry into its component parts.
2. To project to 1970 and beyond, the potentials of the industry considering:
 - a. Growth potentials.
 - b. Investment requirements.
 - c. Market and production requirements.

Methodology Used

This study was conducted at the request of the Hawaii Association of Nurserymen. A list of nurserymen and landscapers was obtained from the Association. Forty-seven different firms were finally adopted as the basis for study. These firms represent nearly 100 percent of the commercial nursery operations on the island of Oahu. There are, as pointed out in the introduction to this study, many sellers of nursery products which could not be readily classified as commercial operations. Included in the noncommercial operations are the part-time or backyard operators for which data could not be secured.

A questionnaire was developed and used with the 47 firms selected for study. Direct interviews were conducted at the place of business of each firm selected (Figure 1). As would be expected, not all firms were able to supply data in all categories of questions asked by the interviewers. This was so because of the heterogeneity of operations for the different firms and because not all firms had equally complete records.

Six years were used as the time frame of reference for this study. The 6 years (1959-1964) were chosen as a result of a questionnaire pre-test conducted in 1962. The pre-test involved 27 different firms most of which were later included in the 1964 survey. The 1962 pre-test showed amply that 6 years was the maximum number of years which could be included in the study without seriously affecting reliability and validity of the study. Two ends were served by pre-testing: (1) It provided the basis for questionnaire evaluation and (2) it provided a basis for comparing final survey reliability and validity.

Not all of the firms studied in 1964 existed in 1959. Nor did all of the firms interviewed in 1962 continue in existence to 1964. There were 20 firms in 1964 which were in operation from 1959 through 1964. All of these firms were included in the questionnaire pre-test and in the 1964 survey.

Purposes and Objectives Accomplished

It was evident from the start of this study in 1962, that the satisfactory accomplishment of objective number one (Present Volume of Business) would be the primary determinant for solving objective number two (Projection of Industry Potential to 1970). At the outset the research effort envisioned a statewide analysis. This goal was dropped because of the minimal relationship of the Oahu firms to Neighbor Island operations in nursery and related landscape activities. For all intents and purposes the nursery industry serving metropolitan Honolulu is on the island of Oahu.

Initially it was also thought that public agencies could be included in the study. However, after considerable efforts to find means for comparative analysis, this attempt was also dropped. Public agencies, although they probably have considerable influence upon the industry, were unable to supply quantitative information with adequate specificity for inclusion in this study.

In objective number two, sections b (investment requirements) and c (market and production requirements) were not well developed. The two reasons for this were (1) the heterogeneity of the 47 firms involved, and (2) limited number of units involved in any one type of operational activity.

Standard statistical techniques were used in both objectives number one and two of the study. For example, in the determination of volume of business, a curve was fitted to describe the growth pattern of firms from 1959 to 1964. The 20 firms in existence in 1959 and also in 1964 were used as the base group for both extrapolation of growth to 1970 and for the vertical growth of the industry to 1964. It is recognized that this small number of firms for purposes of generalization leaves something to be desired. However, the rationale was that there was no better basis for analysis.

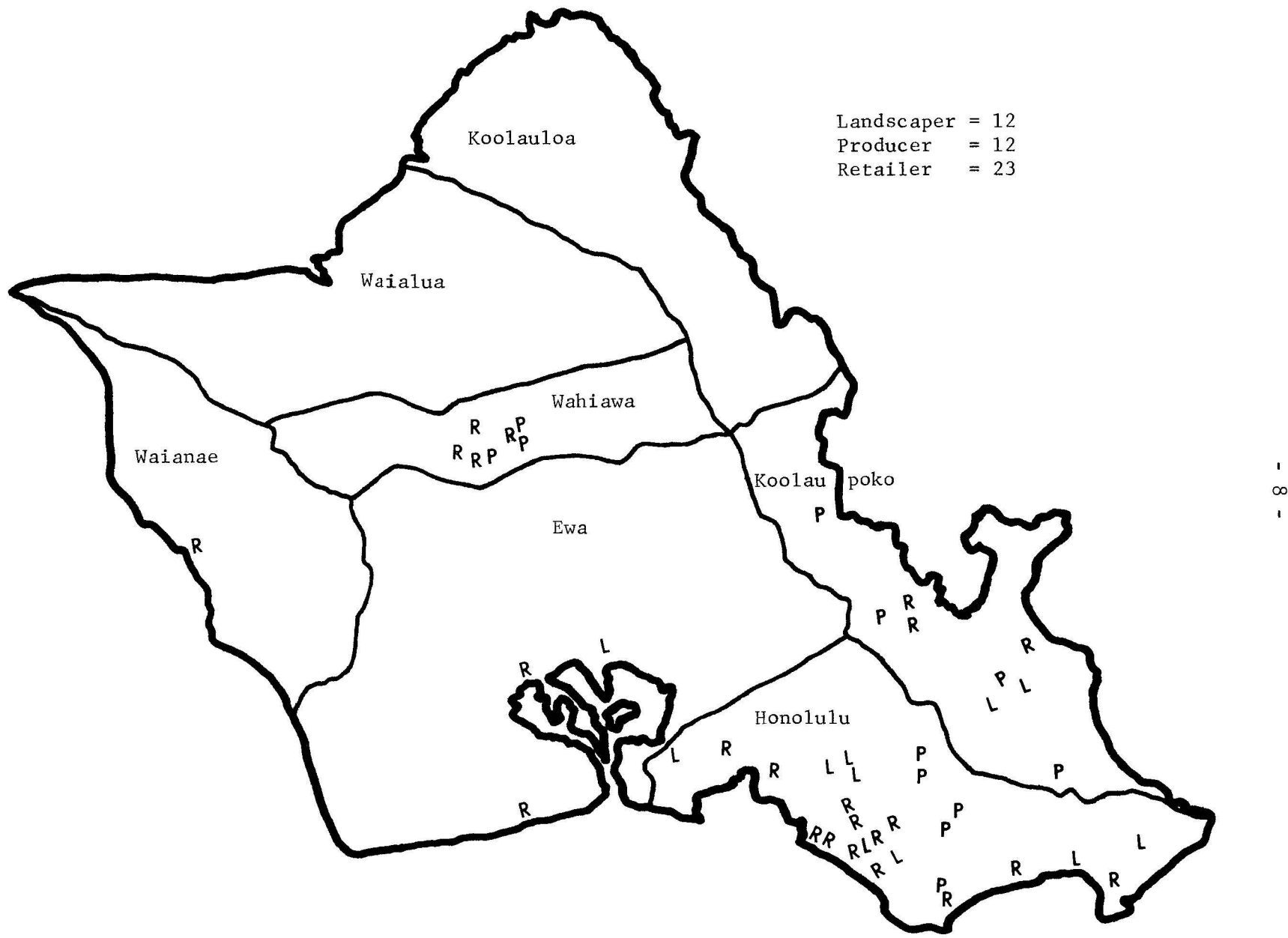


Figure 1. Distribution of selected landscape and nursery firms on Oahu, Hawaii

Volume of Business

The gross volume data secured from the 1964 survey was used to show the gross volume sales for the industry. It was assumed that the slope of the curve for the 20 base firms adequately described intra-industry and intra-time growth. The 1964 gross sales volume was assumed to represent the annual sales of firms. A determination of validity for this assumption was made by comparing sales for firms reported for less than the full 6 years but more than the base year of 1964. The results of this comparative analysis was that it generally supported the further assumption that the effect of some firms entering into the industry were offset by firms dropping out of competition.

Labor Requirements

One of the more important considerations in the analysis of the nursery and related landscape industries in Hawaii had to do with the amount and kind of labor required and the potential for employment within the industry. Data were secured which show primarily the different classes of labor used. However, the study was not able to provide much useful information on changes in the labor force over the whole of the 6 years. Some indications were from the 1962 pre-test on 27 firms that the labor structure did not change materially over the 6 years included in the study. The wage rates used are those reported for 1964.

Seasonality of Sales

An attempt was made to determine the seasonal nature of the industry. The data secured are rough in that most respondents reported estimates of business in percentages for the different classes of sales activity. In order to arrive at an industry seasonal distribution, it was necessary to aggregate sales for all firms and then determine by an averaging technique the seasonal distribution. A more sophisticated technique was impractical because of the limited number of firms available for study. The findings are discussed in this report.

Firm Classification

Due to the highly diverse nature of the nursery-landscape industry in Hawaii, some attempt seemed necessary to classify relevant segments. After considerable trial and error, it was decided that the firms could most effectively be divided on the basis of sources for plant materials and purpose for which material was purchased (use or resale). On the basis of these two criteria, the 47 firms were separated as shown in Table 2. That is, there were 12 firms classified as primarily nursery production operations, 12 landscape service operations, and 23 nursery products retail operations.

THE NURSERY AND RELATED LANDSCAPE INDUSTRY, 1959-1964

The island of Oahu is the center for Hawaii's major economic activity. In 1964, Oahu accounted for about 80 percent of the State's population. At that

time, 55.50 percent of the island's population was located within the city of Honolulu proper. The remaining 44.50 percent was distributed over the rest of the county. In order to understand the nature of population distribution on the island of Oahu, Table 1 is presented.

Table 1. 1960 Honolulu County population distribution pattern^{1/}

District	1960 ^{2/}	1964	1960	1964
			Percent	Percent
Honolulu proper	294,194	327,398	58.80	55.50
Honolulu rural	206,213	262,183	41.20	44.50
Honolulu County total	500,407	589,581	100.00	100.00

^{1/} State Department of Planning and Economic Development.
^{2/} U. S. Census 1960.

Geographic Distribution of Nursery and Related Landscaping Activities on Oahu

The geographic distribution of the three classified activities are shown in Table 2.

Table 2. Geographic distribution pattern of 47 nursery and related landscape industry firms by primary activities

Districts ^{1/}	Primary activity classes		
	Product sales	Nursery production	Landscape services
Honolulu	13	5	8
Ewa	2	-	1
Koolaupoko	3	4	3
Wahiawa	4	3	-
Waianae	1	-	-
Waialua	-	-	-
Koolauloa	-	-	-
Total	23	12	12

^{1/} See Figure 1.

Table 2 shows that 23 of the 47 firms were classified as primarily retailing operations. Fifty-five percent of all firms were located in Honolulu proper, as were 56.5 percent of the retailing operations.

Income Patterns for the Industry

In order to understand the nature of the industry, an attempt was made to determine the gross sale receipts for the 47 different firms. Income data was available from 40 of the 47 firms studied in 1964. Estimates for the remaining 7 firms were derived from 1962 data. Table 3 shows the income patterns for firms and the type of selling activity predominating in the firms for which data were available in 1964. It is noteworthy that for firms where the predominating activity was purely wholesaling, gross income was less than \$40,000 per annum. In the retail and combination wholesale and retail operations, 10 and 4 firms, respectively, were below the \$40,000 gross income classification. For all firms, 48 percent realized incomes below the \$40,000 level.

Table 3. Gross income by firms in 1964

Frequency by income class intervals	Predominant type sale activity			
	Frequency all firms	Wholesale operation	Retail sales operation	Wholesale and retail operations
<u>Gross dollars</u>				
0 - 19,999	10	3	4	3
20,000 - 29,999	6	1	4	1
30,000 - 39,999	3	1	2	-
40,000 - 49,999	3	-	2	1
50,000 - 74,999	2	-	2	-
75,000 - 99,999	2	-	2	-
100,000 - 149,999	2	-	2	-
150,000 - 199,999	3	-	2	1
200,000 - and over	9	-	7	2
Total	40	5	27	8

Plant Material Sales

The classification of firms into their major functional activity and by source of plant material showed that by far the more important aspects of commercial operations had to do with retailing. Table 4 shows that about 66 percent of the gross revenue generated in the plant materials sector of the industry was for resale purposes. Retailers produced very little plant material on their own account.

Table 4. Dollar value and source of plant materials sold in 1964

Source of plant materials	Predominant type sales activity				
	Product retailers	Nursery producers	Landscape services	Total value	Percent
	Dollars	Dollars	Dollars	Dollars	
Produced	23,306	212,096	120,185	355,587	34.3
Purchased from others for resale	629,352	11,163	40,061	680,576	65.7
Total	652,658	223,259	160,246	1,036,163	100.0

The producers and landscapers generated 34 percent of the gross sales value in plant materials. This income was at wholesale prices. Assuming that the retail value represents a 50 percent markup on sale price, the nursery producer's share of sales would be worth about \$446,500 at retail. (Normal markups reported by firms both in 1962 and for 1964 were about 50 percent of retail sales price.)

$$\frac{\text{Wholesale price}}{\text{Retail price}} = 50\% \text{ markup on selling price,} \\ \text{or } 100\% \text{ of purchase price}$$

Where the wholesale price is known we can compute for the probable retail price as follows:

$$\begin{aligned} \frac{\$212,096 + 11,163}{X} &= 50\% \\ X &= \frac{\$223,259}{50\%} \\ X &= \$446,518 \text{ (Retail value of nursery producer's} \\ &\quad \text{share of plant material sales)} \end{aligned}$$

If one assumes a similar procedure for sales of plant materials used in the landscape sector of the industry, the computed sales of plant materials would be \$320,500. This is a proper approach in that the landscape services sell to themselves at wholesale prices.

In addition, retailers will also have made purchases from individuals not included in either the producer or landscape service categories. Using a reasoning procedure in reverse of that employed in computing the retail value of plant materials above, the wholesale purchases made from part-time operators can also be readily estimated.

Total retail sales (from Table 4)	$\$675,964 = \overline{629,352} + \left(\frac{23,306}{0.50}\right)\overline{7}$
Less commercial purchases (from Table 4)	$446,518 = \left(\frac{212,096 + 11,163}{0.50}\right)$
Noncommercial purchases	$= \$229,446$

The difference (probable error) in plant material values at retail and wholesale as presented in Table 5 amounts to about \$40,000. This amount is attributed to the unknown as footnoted in Table 5.

The 50 percent markup on sales price, it was concluded, would contain any increased value (appreciation) of inventories held at the retail level. The estimate for sales at retail of plant materials in all categories was just about one million dollars in 1964, Table 5.

Total Sales

A second approach to income determination for the industry was made. This is to determine gross income from all sales for firms over a 6-year period, 1959 through 1964. Table 6 presents these data. As it may be noticed, each of the 6 years is represented by a different number of firms. It was only possible to secure complete data for 20 firms over the whole time period studied. The volume of total business done (sales) by these 20 firms is shown in Table 7 (bench mark firms). In comparing tables 6 and 7 it is evident that the nursery production sector had the most significant change. The new firms took the lion's share of the increase in sales over the 6 years studied. The 4 producers (bench mark firms) showed no significant growth over the 6 years (Table 7). Comparative dollar volumes and percentages of sales attributable to the different types of sales outlets are presented in Table 8.

Table 8 shows that the share of sales going to new firms stabilized at about 20 percent of the total. This may indicate that prior to 1962 there were some additional firms in the market place which for one reason or another were no longer in business during the 1964 survey. The table also indicates that for at least the last 3 years all relevant firms in the industry were probably accounted for in this study.

The total sales for the industry reported in tables 8 and 9 would indicate that the growth has been rather constant in dollar volumes for the combined industry. The tables further show that for the most part growth has been in the established firms. Except for 1962, the proportionate growth has favored the bench mark firms. Table 9 shows growth in dollar volume and percent of growth attributable to both bench mark firms and new firms. Further comparisons are made later in this report where future sales projections are estimated.

Table 5. Sales patterns for plant materials--nursery and related landscape industries, 1964

Wholesale sources	Wholesale value 1964	Mark up at 50% sales price	Retail sale estimates	Actual sale reported
	<u>Dollars</u>	<u>Dollars</u>	<u>Dollars</u>	<u>Dollars</u>
Nursery producers				
Production	212,096	424,192	--	212,096
Purchases	11,163	22,326	--	11,163
Landscape services				
Production	120,185	240,370	240,370	120,185
Purchases	40,061 ^{1/}	80,122	80,122	40,061
Product retailers				
Production	23,306	46,612	46,612	23,306
Purchases	--	--	669,060	629,352
Noncommercial				
Production	111,271	222,542	--	--
Purchases	--	--	--	--
Total	518,082	1,036,164	1,036,164	1,036,163

^{1/} ± Probable error. It could not be determined where the source of purchases for the landscape service sector was. It is probable that both commercial and noncommercial producers made these sales.

Table 6. Sales volume all firms, 1959-1964

Class of operation	1959		1960		1961		1962		1963		1964	
	No. firms	Gross sales	No. firms	Gross sales	No. firms	Gross sales	No. firms	Gross sales	No. firms	Gross sales	No. firms	Gross sales
Nursery producers	4	46,541	6	99,580	7	115,471	7	139,666	9	197,008	10	223,259
Landscape services	7	878,181	8	905,494	9	984,234	10	1,029,536	11	1,684,394	11	1,435,443
Product retailers	9	1,246,836	11	1,530,546	12	1,725,910	15	2,223,171	17	2,390,232	16	2,467,250
Total	20	2,171,558	25	2,535,620	28	2,825,615	32	3,392,373	37	4,271,634	37	4,125,952
Less 20 firms	--	--	5	177,835	8	311,247	12	693,292	17	847,370	17	840,068

Table 7. Sales volume for 20 bench mark firms, 1959-1964

Class of operation	Number of firms	Sales					
		1959	1960	1961	1962	1963	1964
Nursery producers	4	46,541	46,097	46,548	49,404	52,253	55,280
Landscape services	7	878,181	905,094	968,434	1,008,738	1,571,194	1,245,343
Product retailers	9	1,246,836	1,406,594	1,499,386	1,640,939	1,800,817	1,988,261
Total	20	2,171,558	2,357,785	2,514,368	2,699,081	3,424,264	3,288,884

Table 8. Contribution to gross income of industry by non-bench mark firms, 1959-1964

	Dollars					
	1959	1960	1961	1962	1963	1964
Total sales ^{1/}	2,171,558	2,535,620	2,825,615	3,392,373	4,271,634	4,128,952
Bench mark firms ^{2/}	2,171,558	2,357,785	2,514,368	2,699,081	3,424,264	3,288,884
Difference	--	177,835	311,247	693,292	847,370	840,068
Source of income (Difference)						
Nursery products	--	53,483	68,923	90,262	144,755	170,979
Landscape service	--	400	15,800	20,798	113,200	190,100
Product sales	--	123,952	226,524	582,232	589,415	478,989
Total	--	177,835	311,247	693,292	847,370	840,068
Percent						
20 firms ^{3/}	100.00	92.99	88.98	79.56	80.16	79.65
Non-bench mark firms ^{4/}						
Nursery products	--	53.70	59.70	64.60	73.50	75.60
Landscape service	--	0.40	1.60	2.00	6.70	13.20
Product sales	--	8.10	13.12	26.20	24.70	19.40
Non-bench mark firms average ^{5/}	0.00	7.01	11.02	20.44	19.84	20.35

^{1/} All firms for 6 years, 1959-1964.

^{2/} Twenty firms operational all of the 6 years 1959-1964 and for which data could be secured for 6 years.

^{3/} Percent of income produced by bench mark firms.

^{4/} Percent of total sales by categories (of all firms other than bench mark firms).

^{5/} All non-bench mark firms--weighted averages.

Table 9. Sales trends for Hawaii nursery and related landscape industry, 1959-1964

Year	Total sales	Increases in sales			Percent growth bench mark firms	Percent growth new firms ^{1/}
		Total annual	Bench mark firms	New firms ^{1/}		
	Dollars	Dollars	Dollars	Dollars		
1959	2,171,558	0	0	0	--	--
1960	2,535,620	364,062	186,227	177,835	7.3	7.0
1961	2,825,615	289,995	156,583	133,412	5.5	4.7
1962	3,392,373	566,758	184,713	382,045	5.4	11.3
1963	4,271,634	879,261	725,183	154,078	17.0	3.6
1964	4,128,952	-142,682	-135,380	-7,302	-3.3	-0.2
Average	--	391,479	223,465	168,014	6.4	5.3

^{1/} Other than those classified as bench mark firms.

Patterns of Cost

Considerable effort was expended in the 1962 pre-test to determine the costs involved in the operations of representative nursery firms. The data received from 27 different case firms were of such a diverse nature that these could not be organized in any fashion which would be truly representative of any particular segment of the industry. The only really useful datum which would lend itself to analysis was labor inputs. It was, therefore, decided to include a section on labor in the 1964 survey of the industry.

Type of Labor

Labor data were available from 35 of the 47 firms studied. The classification used for the nursery and related landscape industries was (1) family labor and (2) hired labor. These two classes were further classified. First, family labor was divided as to either paid or unpaid; and second, hired labor was classified as full-time or part-time. Table 10 shows the number of workers involved for each of the 4 subgroups. The data presented in the table are for the year 1964 alone.

In the 6 years 1959-1964 there was some change in the average labor requirements for all three of the segments composing the industry. Nineteen of the 20 bench mark firms are used as the basis for estimating change over the 6 years involved in the study. The data for 1 of the 20 bench mark firms

Table 10. Labor use 35 nursery and related landscape service firms in Honolulu, 1964

Class of operation	Firms involved		Type of labor				Total labor used
			Family labor ^{1/}		Hired labor ^{2/}		
	Total firms	Number reported	Paid	Unpaid	Full-time	Part-time ^{3/}	
Nursery producers	12	10	3	16	17	10	46.0
Landscape services	12	10	5	10	111	9	135.0
Product retailers	23	15	3	10	56	29	98.0
Total	47	35	11	36	184	48	279.0
Full-time equivalent ^{4/}	--	--	11	36	184	24	255.0

^{1/} Family labor was classified into two sorts--paid and unpaid. All family labor is reported as full-time equivalents. There was no way for determining quality of this labor.

^{2/} Hired labor was divided as either full-time or part-time labor.

^{3/} Part-time labor was calculated to be equal to half-time. On the average slightly more than 4 hours per worker, per work day was involved.

^{4/} The full-time equivalents includes 48 half-time workers.

Note: Labor for 19 of the 20 bench mark firms is included in Table 11.

Table 11. Gross sales per paid worker for 19 of the 20 bench mark firms, 1959-1964

	Number of firms	Paid workers		Total sales revenue		Paid workers per \$100,000 sales		Dollar sales per paid worker	
		1959	1964	1959	1964	1959	1964	1959	1964
Nursery producers	4	9	11	46,541	55,280	19.3	19.9	5,171	5,025
Landscape services	6	81	103	678,181	992,541	11.9	10.4	8,373	9,636
Product retailers	9	51	67	1,246,836	1,988,261	4.1	3.4	24,448	29,676
Total	19	141	181	1,971,558	3,036,082	--	--	--	--
Averages	--	--	--	--	--	7.2	6.0	13,983	16,774

were not accurate enough to be included. Table 11 shows the relative change for the 2 years 1959 and 1964. The most important relationship involves dollar sales per worker. For the 19 firms included in the table, it appears that increased revenue per worker occurred for landscape services and product sales. Nursery producers remained about the same. It should be realized that increased dollar sales may only indicate that prices have gone up over the time period under consideration. In fact, prices did rise by about 2.4 percent per year (Consumer Price Index 1959-1964, Table 14). If price change is allowed for, the following dollar sales increase per worker is realized: Nursery producers--\$767.00; Landscape services--\$258.00; Retailers--\$2,294.00 per year in 1964.

Labor costs were secured from 29 of the 47 firms for which data were collected. It is evident in Table 12 that both production and landscape services are highly labor intensive. In both of these cases labor-costs pay-outs account for more than one-third of the gross revenue in 1964. The most significant feature of Table 12 is the last column which shows the percentage relationship to the industry. It must be remembered that nursery production sales are wholesale values whereas landscape services and product retail sales are retail values.

Table 12. Patterns of labor costs for 1964 in nursery and related landscape service industry

	Firms	Sales	Estimated labor payment	Wages
	<u>Number</u>	<u>Dollars</u>	<u>Dollars</u>	<u>Percent</u>
Nursery producers	9	197,008	74,800	38.0
Landscape services	8	1,341,894	462,304	34.5
Product retailers	12	1,609,232	252,914	15.7
Total	29	3,148,134	790,018	25.1

Seasonality of Sales

A question of some interest to people involved in the nursery and related landscape industries has to do with seasonality of business activity. In order to make this determination, the 1964 survey contained a section concerning sales volume distribution over a year's time. For the most part, the data secured were best estimates by all of the firms involved in the 1964 survey. Table 13 shows the seasonal characteristic for the sales of plant materials. Most sales in 1964 took place in the first two quarters of the year. The third and fourth quarters of the year accounted for about 44 percent of all plant sales. When plant sales were compared with hardgood and nursery supply sales, it was found that second and third quarters accounted for 58 percent of the sales, 28 percent in the second quarter and 30 percent in the third quarter. Landscape service sales were mostly in the third and fourth quarters of the year, accounting for 55 percent of the total in the two quarters.

Table 13. Seasonality of sales for plant materials for Hawaii nursery and closely related landscape industry, 1964

Type of activity	Sales							
	Plant materials				Other sales			
	First quarter	Second quarter	Third quarter	Fourth quarter	First quarter	Second quarter	Third quarter	Fourth quarter
	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent
Nursery production	21.6	24.0	26.5	27.9	--	--	--	--
Landscape services	18.7	26.7	23.4	31.2	26.6 ^{1/}	27.1 ^{1/}	27.0 ^{1/}	23.3 ^{1/}
Retail sales	31.0	31.4	18.0	19.6	17.4 ^{2/}	28.0 ^{2/}	30.0 ^{2/}	24.6 ^{2/}
Weight averages	27.1	29.1	20.7	23.2	--	--	--	--

^{1/} Includes sales of all goods and services except plant materials.

^{2/} Includes all hardgood sales except for small amount classified as pet supplies. Included were all hardgoods and necessary supplies.

THE NURSERY AND RELATED LANDSCAPE INDUSTRY IN 1970

One of the objectives of this study was to attempt a projection of the future growth for the nursery and related landscape service industry on the island of Oahu in Hawaii. The question asked was, what will be the size and income pattern of the industry in the year 1970? In order to answer this question, it was necessary to determine something about the current size and income pattern of the industry. This was done in the previous part of this report.

It would be desirable to have data for the industry over at least a 15-year period or perhaps for the whole of the time since World War II. This type of data does not exist nor was it possible to expand the number of firms finally chosen as the basis for study.

The procedure used was to attempt extrapolation by subjecting the 1959-1964 sales volume data to selected variables. The effects of variables on 1959-1964 data were then extended directly to 1970. The assumption was that 1959-1964 trend characteristics are sufficient criteria for describing the relatively short-run period 1965-1970. Four variables were tested as to their effect on sales volume and hence on industry income.

- (1) Effect of population (De facto)
- (2) Effect of price (Consumer Price Index)
- (3) Effect of income (Per capita)
- (4) Effect of housing starts (Net)

Sales Volume

A growth line (Figure 2) was fitted to the 1959-1964 data using the 20 bench mark firms as the base. The same data used in Figure 2 are used in the development of the projection model shown in Figure 3. The technique involved a graphic method of fitting a curve to the data and the projection of 1959-1964 curve to 1970. The figure shows that if trends for the 6 years were realistically descriptive of the rate of growth and if nothing is done to change this rate, then by the year 1970 the bench mark firms should be doing about 7 million dollars worth of sales. Assuming, on the other hand, that the last 3 years shown in Figure 2 are representative of the relative amount of business done by firms other than the bench mark group, total volume of business can be shown. (The amount of business done by non-bench mark firms is also shown in Table 8.) In the last 3 years (1962-1964) these firms were conducting about 20 percent of total volume. If the estimate for these firms is added, using the growth curve projection 1959-1970, the total sales by 1970 for all firms should be between 8 to 9 million dollars.

Perhaps the assumption that growth will be at an increasing rate is too optimistic. A more realistic basis for projection might be some sort of straight line value; that is, a constant rate of growth (Figure 4). This more conservative projection was made using 1959-1964 sales data. The fact that there are only 6 years of data available for analysis makes the more conservative growth estimates more attractive. As information for additional years becomes available more precision can be built into the growth model.

No attempt was made to separate the total sales volume into its component parts. It was simply not practical to take the limited data beyond its face value; that is, the authors were willing to accept the 1964 information as descriptive for the industry in any one year. The 1964 sales for plant materials are presented in Table 5.

Impact of Selected Variables on Projected Sales, 1959-1970

Population (Effect of De facto Population)

During the 6 years 1959-1964, population had increased from about 446 thousand on Oahu to nearly 541 thousand. Table 14 shows population numbers for the years in which this study was directly involved. The table also presents several indices which are used for comparative and data extrapolation purposes further along in this study. Included are indices for population and sales, and an index for consumer prices. Population was reduced to an index in order to see relative change over the time period studied. By inspection of the index in Table 14 it can be seen that population increased by 20 percent in the 6 years, or about 4 percent per year. This assumes 1959 as the base year. At the same time, total annual sales increased by 61 percent or about 12 percent per year. This means that individual (per capita dollar amount) expenditures for nursery products and services increased at a more rapid rate than population growth. The rate of per capita expenditures increase was at an average of 6.6 percent per year.

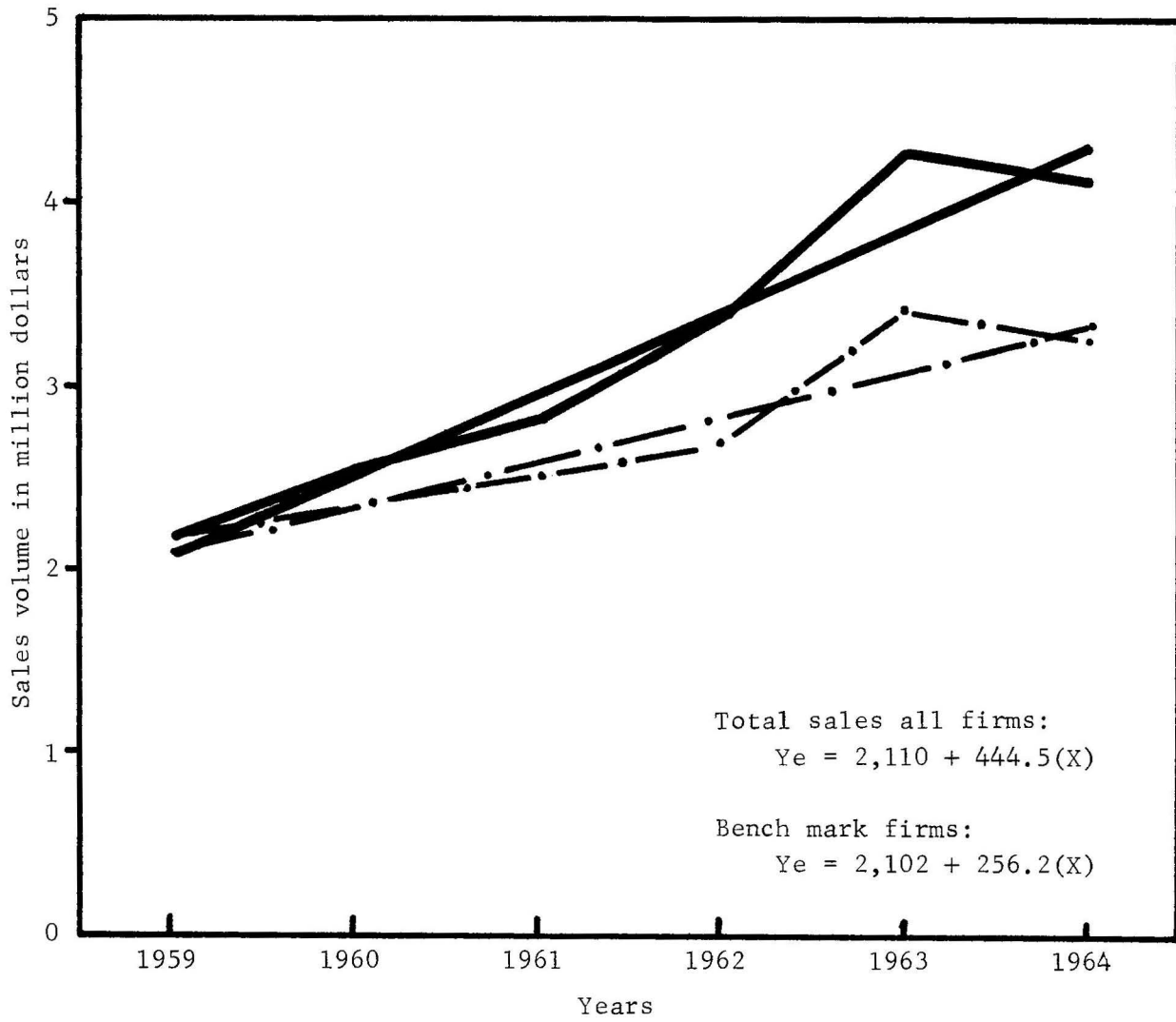


Figure 2. Trends in gross sales for 20 bench mark firms and all firms, 1959-1964

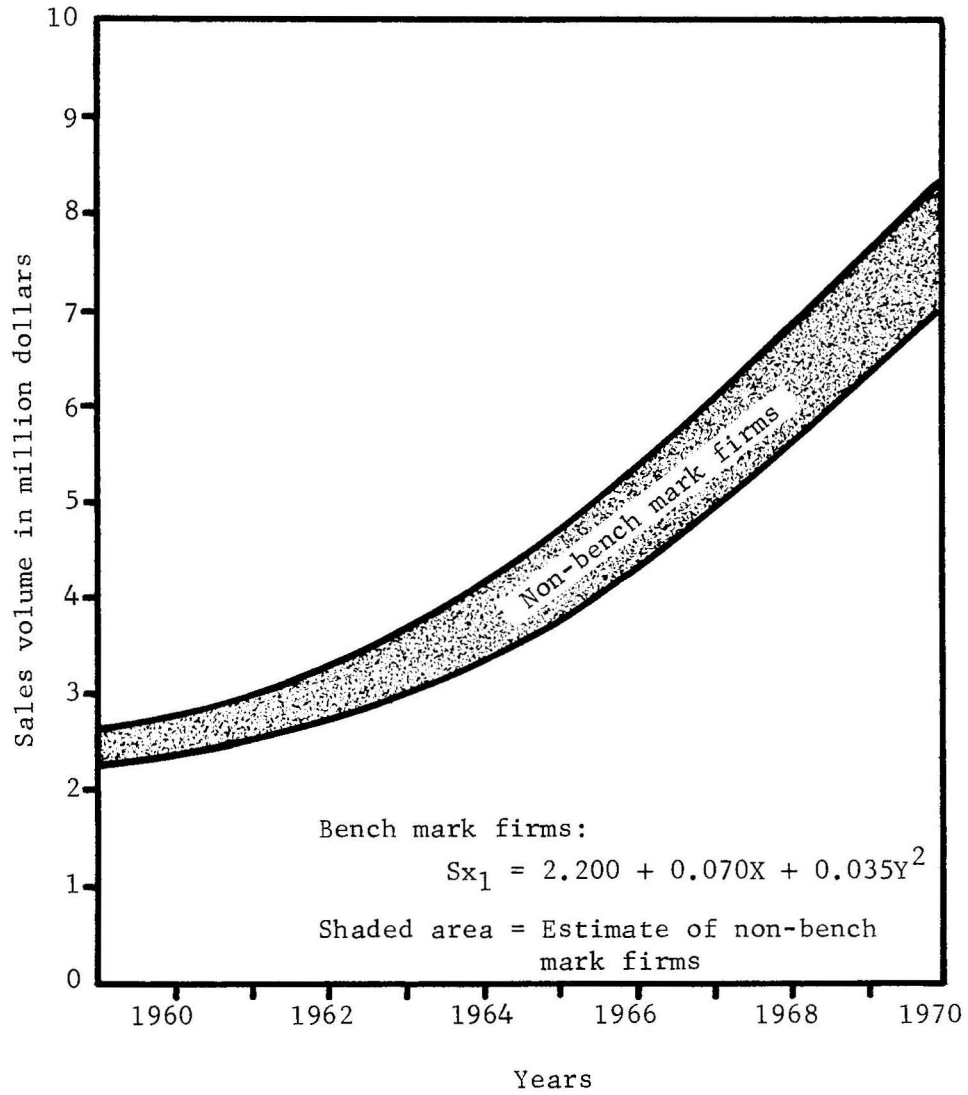


Figure 3. Sales volume projections for 20 benchmark firms, 1960-1970.

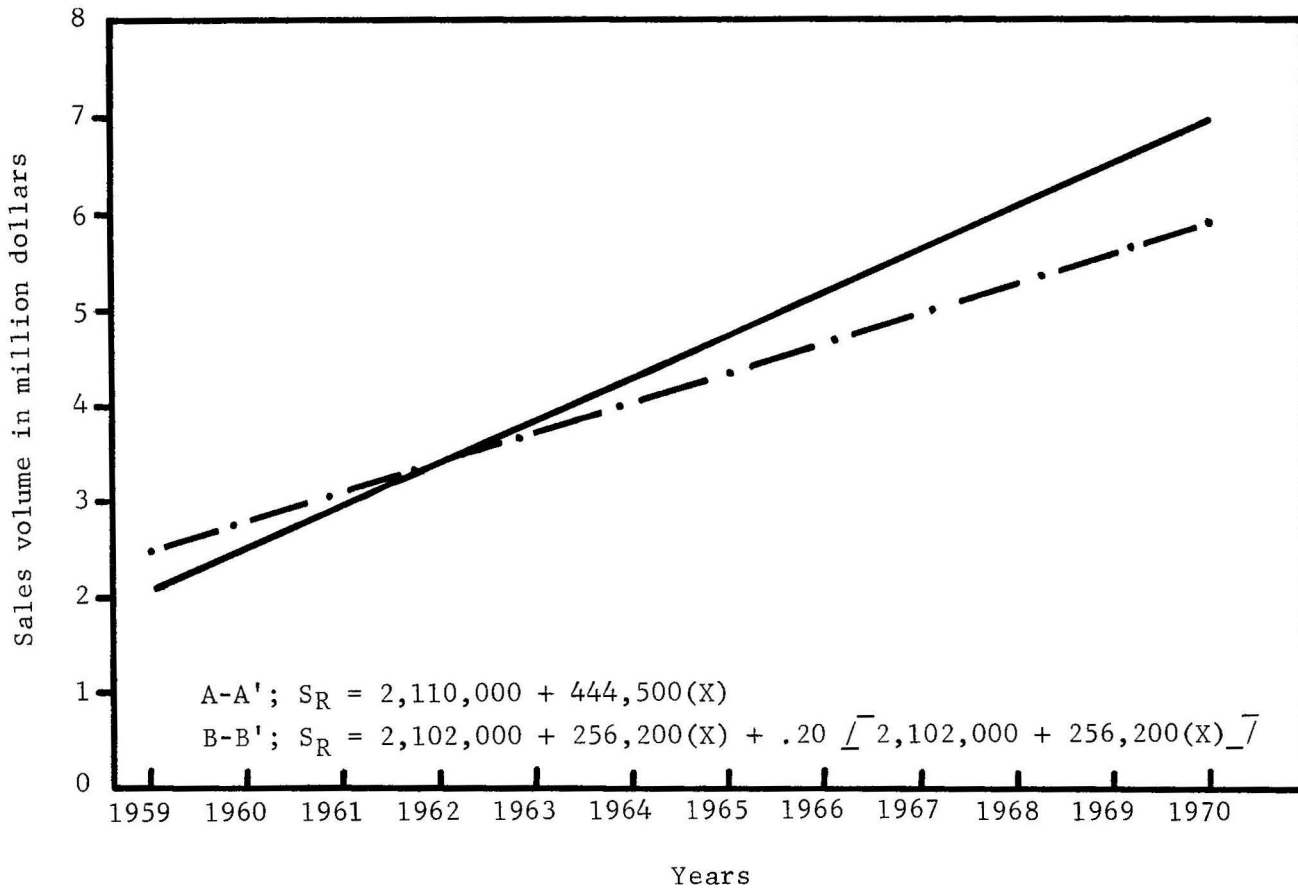


Figure 4. Growth projections for the Hawaii nursery industry, Honolulu County, 1959-1970

The straight line equation used was of the sort $S_R = 2,110,000 + 444,500(X)$, A-A'. This formulation assumes that the 6 years used 1959-1964 shows accurately the dollar amounts of business. The more probable situation, one more descriptive of what actually did occur is in the line B-B'. Here it is assumed that the 3 years 1962-1964 show accurate amounts of dollar returns to the industry. In line B-B'. it is assumed that bench mark firms did about 80 percent of the total business over the period 1959-1964, and that new or other firms did the remaining 20 percent of the business, see Table VIII (new firms).

Table 14. Comparative indices for Hawaii's nursery and related landscape industry, 1959-1964

Year	Population			Sales		Comparative indices: 1959 = 100			
	De facto civilian population ^{1/}	Military personnel ^{2/}	Total population Oahu ^{3/}	Annual ^{4/}	Per capita ^{5/}	Annual sales	De facto civilian population	Per capita sales	Consumer prices ^{6/}
	Number	Number	Number	1,000 Dollars	Dollars	Index Number	Index Number	Index Number	Index Number
1959	445,972	56,303	502,275	2,522	5.66	100	100	100	100
1960	458,407	52,881	511,288	2,830	6.17	112	102	109	102
1961	468,678	54,653	523,331	3,137	6.69	124	104	118	105
1962	500,337	59,482	559,824	3,445	6.89	137	111	122	108
1963	520,999	59,429	580,428	3,752	7.20	149	116	127	111
1964	540,872	59,626	600,498	4,060	7.51	161	120	133	112
Annual mean	19,020	661	19,681	12.2	0.37	12.2	4.0	6.6	2.4

^{1/} State Department of Health, Civilian Population, Births, Deaths and Migration Data of Hawaii by Geographic Area, 1950-1962 and Personal Communications.

^{2/} State Department of Planning and Economic Development, Statistical Report No. 20. Corrected report issued November 6, 1964.

^{3/} Includes de facto civilian population and estimate for Armed Forces in Hawaii.

^{4/} Estimating procedure used is as depicted by curve A¹¹ - c Figure IV $S_R = a + bx + .20 \sqrt{a + b(x)}$ where a = \$2,102,000 and b = \$256,200.

^{5/} Uses only de facto civilian population.

^{6/} First National Bank of Hawaii, annual published economic reports and estimates.

Price Change

It was next to impossible to secure accurate price data from industry sources. In order to determine the probable effect of price it was decided that published indices of consumer prices for Hawaii would be used. It was felt that the consumer price index would be the most useable measure for determining the impact of price change on the industry. The most important value to be derived was the probable impact on gross income to the industry.

The estimated gross income from sales for the 6 years 1959-1964 is shown in Table 14. If income from sales is deflated to 1964 dollar values, the dollar volume will just clear the 5 million dollar level, column 5 Table 15, by 1970.

Table 15 shows per capita expected revenue generation from the sales of nursery and landscape goods and services if population growth alone is considered in column 4; and if population and a value for consumer price index are used, and where the price index is equal to 100 in 1964, column 6. From the table it seems apparent that growth will occur in the future. However, it seems equally apparent that, in terms of estimated price change characteristics employed in the computations, the industry will not experience exceptional improvement in real gross income by 1970. Much depends upon the base period from which income projections are made.

Income Change

A third factor which was considered relative to future sales potential had to do with income of consumers. It may be that as incomes rise for Oahu householders, more spending will find its way into the nursery and its related landscape industry sales. Data published annually by the First National Bank of Hawaii show that personal income on Oahu has increased. The income data for the 6 years used in this study are shown in Table 16.

An examination of the table reveals that individuals on the average have had increased income but they did not spend significantly more of their income for nursery or landscape products and services, columns 5 and 6. Column 6 shows that if the trend for the years 1961-1964 is extended to 1970, increases of less than one tenth of 1 percent are indicated. Column 6 is a freehand-drawn curve showing a slope approximately by the following formula: $Y_e = 2.712 + .011(X)$. What this seems to show is that if nothing is done to stimulate consumers to buy more they will tend to spend about the same percentages of their disposable income for nursery and related landscape goods and services in the future as they did in 1961 through 1964.

It must be remembered that the above small gains in per capita sales are even more insignificant if incomes are deflated as in Table 15. The gains in sales will, therefore, come primarily from increases in market size rather than from increases in per capita expenditures.

New Construction

The fourth measure used to attempt estimation for future nursery and related landscape industry sales effect had to do with new dwelling unit construction. An obvious effect of new home building on the industry is that of

Table 15. Per capita estimates, 1959-1970

Year	Population		Actual sales revenue (estimates)		Deflated to 1964 values sales revenue	
	Actual number ^{1/}	Trend ^{2/}	Total dollars ^{3/}	Per capita ^{4/}	Total dollars	Per capita ^{4/}
			1,000 Dollars	Dollars	1,000 Dollars	Dollars
1959	445,972	442,662	2,522	5.70	2,824	6.38
1960	458,407	461,267	2,830	6.14	3,100	6.72
1961	468,678	479,867	3,137	6.54	3,364	7.01
1962	500,337	498,467	3,445	6.91	3,610	7.24
1963	520,999	517,067	3,752	7.26	3,820	7.43
1964	540,872	535,667	4,060	7.58	4,060	7.58
1965	--	554,267	4,368	7.88	4,262	7.69
1966	--	572,867	4,675	8.16	4,451	7.77
1967	--	591,467	4,983	8.42	4,625	7.82
1968	--	610,067	5,290	8.67	4,783	7.84
1969	--	628,667	5,598	8.90	4,929	7.84
1970	--	647,267	5,906	9.12	5,055	7.81

^{1/} From Table 14, de facto resident civilian population estimates.

^{2/} Least square estimates 1959-1964 projected to 1970.

^{3/} Sales revenue extrapolation estimating procedure = $2,102,000 + 256,200(X) + .20 \sqrt{2,102,000 + 256,200(X)}$.

^{4/} Uses least square population projection as dependent variable, see footnote 2.

Table 16. Per capita personal income estimates for the de facto resident civilian population, Oahu, Hawaii

Year	Population estimates	Per capita personal income ^{1/}	Aggregate personal income 1,000 Dollars	Sales as percent of income
	<u>Number</u>	<u>Dollars</u>	<u>Dollars</u>	
1959	445,972	2,290	1,021,276	2.469
1960	458,407	2,455	1,090,550	2.595
1961	468,678	2,524 ^{2/}	1,156,697	2.712
1962	500,337	2,503	1,278,861	2.694
1963	520,999	2,595	1,378,042	2.723
1964	540,872	2,732	1,478,744	2.746
1965	--	2,823 ^{3/}	--	2.757 ^{4/}
1966	--	2,912 ^{3/}	--	2.769 ^{4/}
1967	--	3,000 ^{3/}	--	2.780 ^{4/}
1968	--	3,089 ^{3/}	--	2.791 ^{4/}
1969	--	3,128 ^{3/}	--	2.802 ^{4/}
1970	--	3,267 ^{3/}	--	2.814 ^{4/}

^{1/} First National Bank of Hawaii, Economic Indicators. Data for 1961 not available.

^{2/} For 1961 an estimate was provided by First National Bank of Hawaii. No actual data available.

^{3/} Projection through 1964 to 1970. Average rate of change \$88.80 per year.

^{4/} Freehand projection of last 4 years, 1961-1964. Approximate function, $Y_e = 2.712 + 0.011(X)$.

initial landscaping. A difficulty of this sort of measuring device is that the data available for Honolulu county are not very precise. In the development of Table 17 a procedure was used which at best gives only a rough idea of the probable new dwelling units put in place. An additional limitation is in the fact that the military population is not included. Many officers and enlisted men do live off military reservations in civilian accommodations. For all of the above reasons no attempt was made to correlate housing with sales and probable future sales potential. It suffices to say that new home starts probably do have some initial effect upon landscape and nursery sales. Discussion with a limited number of new home owners, indicated that the value of original landscaping is included in the construction of the home. Primarily this includes the normal structural requirement of leveling or grading, construction of sidewalks and driveways. Very little appears to be done in terms of special landscape structures or planting. These activities are left to the home owner, and costs are probably spread over several years after original occupancy.

Perhaps one additional aspect ought to be considered in evaluating the Oahu market for nursery and landscape products and services. That is, there has apparently been an accelerated trend toward apartment type living. Although no attempt has been made to measure the demand characteristic of home owners of any sort, it appears logical that apartment type home owners would have a different type of demand schedule for goods and services as affected by this industry. In all probability, this demand would be much less than it is for the usual type of home owner considered throughout this study.

INDUSTRY PROBLEMS AND REQUIRED ADJUSTMENTS

An important part of both the 1962 pre-test survey and the 1964 industry survey had to do with problems of the industry as seen by the principals concerned. In the 1964 survey respondents were asked:

1. What do you consider to be the one most important or pressing industry problem?
2. What do you consider to be the most important or pressing problem of your firm?

The response to these questions was highly varied. The classes of problems could, however, be divided into several broad categories. Each of these broad categories is discussed in the following.

Production

A wide range of problem areas was presented by respondents and, of course, some of the most revealing comments were received from producers of nursery planting stock.

Land: With increasing population on the island of Oahu, the pressure on land suitable for nursery production is becoming more and more critical.

Table 17. Dwelling units and estimates for new dwelling units

Year	Population--City and County of Honolulu			Per dwelling unit occupancy ^{4/}	Dwelling units in place ^{5/}	Effective dwelling units ^{6/}	Net differences ^{7/}	New dwelling unit placement ^{4/}	Net additional dwelling units ^{8/}
	Total ^{1/}	Civilian ^{2/}	Armed Forces ^{3/}						
1959	502,275	445,972	56,303	3.72	123,484	119,885	3,599	6,331	2,732
1960	511,288	458,407	52,881	3.60	131,894	127,335	4,557	7,108	2,551
1961	523,331	468,678	54,653	3.48	137,398	134,678	2,720	5,423	2,703
1962	559,824	500,337	59,487	3.54	141,874	141,338	536	4,841	4,305
1963	580,428	520,999	59,429	3.55	147,412	146,760	652	5,607	4,955
1964	600,498	540,872	59,626	3.60	153,303	150,242	3,061	5,478	2,417

^{1/} Includes Armed Forces as of January 1 each year.

^{2/} De facto resident civilian population, Table 15.

^{3/} Armed Forces as of January 1, each year concerned.

^{4/} Honolulu Redevelopment Agency, City and County of Honolulu, Hawaii Report No. 25.

^{5/} An attempt was made to convert "dwelling units in places" according to the PRS 1960 definition.

^{6/} Uses per unit occupancy as basis for effective dwelling units--population divided by annual average.

^{7/} Reported dwelling units in place, less effective dwelling units.

^{8/} Estimate for net additional dwelling units.

Concern was shown by producers and others about the cost of land--the more telling difficulty seems to be tenure uncertainties.

Labor: The second most important concern of the industry relative to the production category was the trend toward increasing production costs including the cost for land. The input factor most directly involved was labor. It is contended by producers, and even more, by landscapers and retailers, that labor costs are a significant concern. Corollary with labor-cost is labor-quality. Almost all respondents commented that adequately trained persons could not be readily secured at any of the many technical skill levels. The problem, it was contended, extends down to and includes the common labor classification.

It was also noted that family labor does not fit into the production, landscaping, or retailing activity as it once did. The necessary trend toward commercial operations and their attendant size and complexity required increasing dependence upon hired labor.

Product: There does not appear to be any real set of standards on which producers and users may place reliance. Many of the respondents suggested that a system of standards, enforceable at law, by a suitable government agency, was critically required. Particular references were made to quality, size, variety, age of plants, and methods of containerizing.

New plant introductions were also heavily criticized. Varieties suitable to meet changing user preferences, particularly the preferences of the professional landscape architect or designer, are not being developed fast enough. The general public, it was reported, is also becoming more sophisticated and knowledgeable in demanding variations and improved quality. A need for various segments within the industry to work more closely with all other elements of the industry was suggested by respondents. This was considered important due to the normal time lag experienced between initial introduction and mass production and marketing.

It was also reported by landscapers that the availability of mature plants was a serious problem. It was thought that real estate developers ought to work more closely with landscapers in designing their structures to fit in part the offerings of the landscapers contractor. The thought was advanced by several landscapers and nursery producers that some existing plant materials on site in new developments should be saved.

Competition: The activities in the market by noncommercial growers were held as particularly adverse to sound growth and development of the industry. This includes backyard growers and part-time operators. These, it was believed, function in the marketplace at a decided advantage because they do not have the same kind of labor and overhead cost structures as the commercial producer. Further, it is believed that these operators are not being subjected to the same economic and legal requirements as are the commercial operators.

Some producers and landscapers reasoned that the development of suitable industry standards will not occur until such time as the noncommercial producer can be made to conform to standards. These producers and part-time operators compose a significantly large number, and even though individual volume may be low, taken collectively the impact is felt by the commercial industry.

Gratis Supply Effect: In addition to competition with noncommercial producers as cited above, the industry must compete with a great deal of plant material that moves gratis between householders. The climate is ideal, growing requirements are not very complicated, and therefore almost anyone can and does grow "stuff."

This abundance, it is reported, moves rather freely between neighbors, friends, and relatives. No estimate could be made of this sort of intra-market supply movement nor could even a rough idea of its volume be obtained. Producers, landscapers, and retailers alike commented that this prevented rapid introduction of new and improved varieties of plant products. Plantings in even some of the higher income areas of Honolulu, it is contended, become rather fixed. That is, householders do not tend to change their landscape arrangement once it has become established. In these cases, repeat sales are foreclosed at the time of initial planting.

Marketing

The second category of problem faced by the industry had to do with marketing. On the whole, more comments were received in this category than in any other. The term marketing is meant to convey all aspects of, and/or activities involved in, moving products from production to final sale.

Organization: Members in the industry at all levels felt that the market was not very successfully organized. There were, it was contended, a great many unknowns which give the industry a high degree of instability. In spite of the fact that a nurserymen's association does exist, many members reported a basic inability for the association to successfully resolve many of the recurring problems faced by the industry. Producers suggested that an organization such as theirs might very well become more deeply involved in securing certain types of services for members more economically than if purchased individually. Many different recommendations were made for solving the overall market organization problem. Among these, the following were most relevant to the marketing category.

1. Standards and grades--should be established by the industry and enforced at law.
2. Intra-industry cooperation and coordinating--should be practiced in areas where legally allowed. Dissemination of market information, general supply information, price trends, and product and service promotion, could to a large part be done by or through the association.
3. Consumer education--it was thought that increased sales could be developed by an effective program of consumer education. Involved here are the retailers of nursery products and landscape services.
4. Research--more research in all phases of production and distribution of goods and services was recommended.

Pricing: Almost all respondents commented in one way or another upon pricing of goods and services wholesaled and retailed through the industry sales outlets. Competition at the retail level is affected by many of the factors

already mentioned, such as the lack of product standards, and the quantity and quality of products available from both commercial and noncommercial producers. In addition, some of those interviewed felt that price cutting and other pressure practices by individual members in the industry contributed to unjustified price instability. Uncertainties in the sphere of pricing led to undercutting in contracting with householders and agencies, both public and private.

It was suggested that perhaps a code of acceptable practices should be adopted by the industry. Standards of practices as well as product quality standards should contribute to more effective industry growth and pricing stability. A more direct view was held by a few respondents; that is, that market price coordination or administrative pricing should be practiced. This was justified on the basis that Honolulu is a pocket market and therefore subject to extreme price fluctuations when surplus plant materials become available.

Inventory: Retailers were particularly concerned about this. They generally recognized that inventories contribute heavily to the fixed cost of business operations. However, they argue that their clients require a one-stop garden shop service and, therefore, if they wish to hold customers, they must provide these goods and services.

Solution to these types of problems did not materialize from interviews. The concept of central procurement for many of the durable items stocked by retailers was not considered by any of the individuals interviewed. Perhaps a solution to the inventory problem is in some sort of cooperative procurement.

Merchandising: Many of the producers, landscapers, and retailers keenly felt a need for improved merchandising practices. They also believed that their employees needed training, particularly as this related to meeting the consuming public.

The more relevant problem areas mentioned by respondents were the following:

1. Consumer education--including advertising and product and service promotion.
2. Store layout--including store planning, layouts, and product display.
3. Product diversification--including number and type of items to be merchandised, combinations of products, and instore services.
4. Customer services--quality of service, and type and method of pricing.
5. Pricing as a means for attracting new sales.
6. On-the-job training of employees.
7. Volume discounting, customer adjustment allowances, margins, and markup procedures.

8. Product and service differentiation.
9. Sales forecasting--particularly as relating to new fads and new product lines.
10. Determination of customer satisfaction and acceptance of goods and services.

There is no particular order to the above items mentioned by respondents. For the most part these are items which are of concern to individual firms.

Individuals were, of course, also concerned about supply and resupply dependability, quality of products, and competition from other types of outlets as these affected their business. The supply problem of retailers was not only in the area of plant materials, but in the whole range of products handled. The recommendation for solving the above sort of problems was that the University ought to institute research and training programs to meet firm and industry requirements. Several suggested that their own association might play a larger role in the improvement of merchandising practices and employee training. As for employee training, it was suggested that programs in the State's vocational education area ought to be extended to include landscape, nursery, merchandising, and yardwork training.

Intra-Market Problems

The third area of concern had to do with problems which could not be fitted purely into either production or marketing. In presenting these comments in this publication it was attempted to classify them in a fashion similar to that done under the preceding headings of production and marketing.

Legal Requirements: A number of comments were made relative to the disparity among the commercial producers, the part-time growers or operators, the backyard producers, and the so-called "bootleggers" in the industry. The requirement of the commercial firm to conform to licensing regulations, annual filing with Division of Business Registration, Department of Taxation and others, it was felt, put the legitimate business firm at a decided disadvantage. It was believed by some respondents that commercial firms were often forced to compete with non-tax paying operators. That is, it was believed that some of the part-time operators, backyard growers and others did not pay their fair tariff in state taxes nor did they believe that these people felt any particular responsibility to the industry as a whole.

Intra- and Extra-Industry Coordination: This general heading has to do with adjusting to changing conditions faced by the industry. It was felt by some respondents that government and other types of industry do not recognize the contributions made by the nursery and related landscape industry to the economy and the general community environment.

The idea was expressed that government agencies and other types of firms were willing to sacrifice quality for price when requiring either nursery products or landscape services. In the latter area, the real estate developers were most severely criticized.

Criticism was also leveled at the members of the industry. Some respondents, mostly landscapers, commented that some firms accept contracts with the knowledge that price does not represent the real value of the service to be performed. It was also reported that contracts were knowingly accepted on which the contractor was ultimately forced to produce slipshod work and provide second-rate products in order to break even or to make his normal profit.

Special Products, Services, and Resources: The lack of suitable planting media, large (mature) plant material, cheap water supply, and parent plant materials were mentioned as difficulties for the industry. In addition, there was a concern for disease and insect control measures, particularly as related to chemicals used in nursery and home gardens.

Individuals interviewed were also concerned about the availability of related services such as skilled yardmen and tree trimmers, as well as skilled individuals available for commercial consulting services.

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