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APPLE MARKETING ALTERNATIVES IN WESTERN NEW YORK

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Introduction

U. S. Department of Agriculture statistics indicate that New York, with 21.4 million bushels, produced approximately 14 percent of the total U. S. apple crop in 1974.^{1/} Information concerning alternative market outlets is necessary if the apple marketing process is to be efficient and effective. A knowledge of the costs and net returns associated with each market is essential in determining the most profitable way for the grower to market his fruit.

To date, however, very little research has been conducted to assess the overall disposal pattern of apples or to identify those costs and returns associated with various market outlets. This implies that growers may not have at their disposal the necessary information to adequately evaluate apple marketing alternatives.

Objectives

The objectives of this study were: (1) to determine the market outlets used by Western New York apple growers in 1974 (2) to determine the average selling price for each of these outlets (3) to estimate the cost of selling to each of these markets (4) to determine the net selling price for each of these outlets.

Procedure

From a complete listing of Western New York apple growers a sample of 100 growers was selected for personal interview. The sample was based on grower size in terms of bushels of apples sold in 1973 and on

* We are indebted to Professor Max Brunk, Department of Agricultural Economics, Cornell University, for his contribution in developing and supervising the research.

1/ U. S. Department of Agriculture, Noncitrus Fruits and Nuts-1974 Annual Summary, Crop Reporting Board, Statistical Reporting Service, January 13, 1975.

geographic location. Growers selling less than 15,000 bushels were classified as small growers. Those with sales of 15,001 through 30,000 bushels were classified as medium-size growers. The third size group categorized as large growers, were those reporting sales ranging from 30,001 to 60,000 bushels. Finally, growers with sales of over 60,000 bushels were classified as commercial growers.

Because a larger degree of variation in sales methods was suspected and because large and commercial growers contribute a large proportion to total industry output, these groups were afforded greater weight within the sample. The target rate of sampling for commercial growers was 100 percent. Large growers were sampled at a target rate of 50 percent. Based on the 1973 sales classifications there were 22 commercial and 41 large growers in Western New York. Conversely, the small and medium categories were sampled at target rates of 6 and 20 percent respectively. Small growers numbered 549 and medium growers 121 on the basis of the 1973 figures. These sampling rates were applied within each sample location. Because of grower refusals the actual sampling rate was quite different than the target rate for large and commercial growers (Table 1).

Table 1
Number of Apple Growers in Western New York
and
Number of Growers Actually Sampled By Size Group, 1974

Size Group	Number of Growers	Number Sampled	Sample As Percent of Population	Expansion Factor <u>a/</u>
Small	549	48	8.7	11.44
Medium	121	23	19.0	5.26
Large	41	16	39.0	2.56
Commercial	<u>22</u>	<u>13</u>	<u>59.1</u>	1.69
TOTAL	733	100	13.6	

a/ The expansion factor is the inverse of the sample rate and is used to make industry estimates based on sample data.

Geographically Western New York consists of 32 contiguous counties. Four of these 32, however, represent the greatest number of apple growers and apple acreage in the Western region. Because of their relative importance, Niagara, Orleans, Monroe and Wayne Counties were each treated as a separate sample area. The remaining 28 counties were grouped into

a fifth sample area. In addition to the sampling rates by size categories, sample size within each of the five geographic locations was also determined by the area's representation within the total population. It was intended that each county be sampled in the same proportion as that county represented of the total. Except for minor variations, this goal was accomplished (Table 2).

Table 2
Grower Representation in the Five Sample Areas
of Western New York, 1974

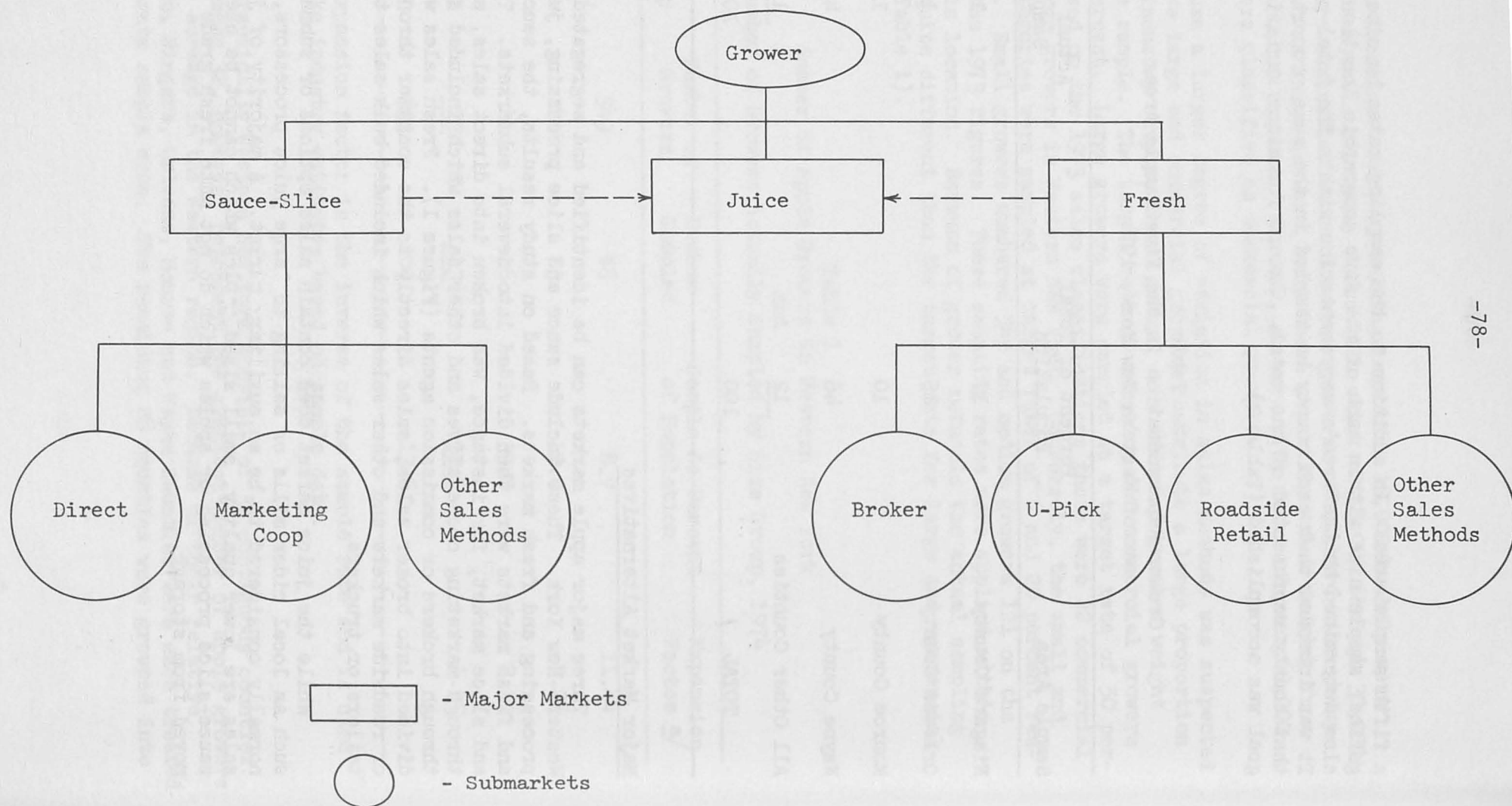
Sample Area	Percent of Total Population	Actual Number Sampled
Niagara County	17	16
Orleans County	15	18
Monroe County	10	10
Wayne County	46	43
All Other Counties	<u>12</u>	<u>13</u>
TOTAL	100	100

Major Market Alternatives

Three major apple markets can be identified and segregated in Western New York. These include sauce and slice processing, juice processing and fresh markets. Based on study results, the sauce-slice and fresh markets were then divided into several submarkets. The sauce and slice market, for instance, was broken into direct sales, sales through marketing cooperatives and other sales which included sales through brokers or commission agents (Figure 1). Fresh sales were divided into broker sales, sales directly to the consumer through U-pick or roadside markets and other sales which included bulk sales to re-tailers or truckers.

While the juice market does contain sales options or submarkets such as local cider mills or selling to large juice processors, it is normally considered to be an auxiliary market. A majority of juice sales are lower quality, small sized apples which cannot be used for sauce-slice processing or apples which do not make fresh grade when removed from storage.

FIGURE 1. ALTERNATIVE MARKET OUTLETS FOR APPLES IN WESTERN NEW YORK STATE



Growers in the sample sold 3,463,856 bushels of apples, valued at \$8,720,589 during the 1974 marketing season (Table 3). Eighty-three percent were sold for processing purposes - sauce, slices or juice. Based on the expansion factor by size of grower (Table 1) the sample data was expanded to estimate total apple sales for Western New York during the 1974 marketing season (Table 3). Total sales were estimated at 14,363,061 bushels, valued at \$38,403,506. An estimated 78 percent were sold for processing purposes.

Table 3
Estimated Volume and Value of Apple Sales in
Western New York, by Submarket, 1974

Submarket	Sample		Population	
	Bushels	Dollars	Bushels	Dollars
Sauce-Slice-Direct	2,445,420	5,613,735	9,264,361	21,814,265
Sauce-Slice-Mktg. Coop.	107,291	266,219	344,483	815,454
Sauce-Slice-Other	73,730	163,873	295,459	632,385
Juice	265,641	306,020	1,308,953	1,490,164
Fresh-Broker	456,214	1,909,748	2,398,212	10,503,965
Fresh-U-Pick	16,595	78,170	138,159	646,963
Fresh-Roadside	36,706	170,966	223,297	1,040,712
Fresh-Other	<u>62,269</u>	<u>211,858</u>	<u>390,137</u>	<u>1,459,598</u>
Total Processing	2,892,082	6,349,847	11,213,256	24,752,268
Total Fresh	<u>571,774</u>	<u>2,370,742</u>	<u>3,149,805</u>	<u>13,651,238</u>
TOTAL	3,463,856	8,720,589	14,363,061	38,403,506

Price received for apples varied considerably by market (Table 4). Prices ranged from \$1.14 per bushel for juice market apples to \$4.68 per bushel for U-pick apples. The average price received in each of the fresh markets was higher than the average price received in each of the processing markets. All fresh market apples had an average price of \$4.33 per bushel compared to \$2.21 per bushel for all processing apples. The average price of all apples sold in Western New York in 1974 was estimated at \$2.67 per bushel.

Table 4
Estimated Price Received for Apples in
Western New York by Submarkets, 1974

Submarket	Average Price
	\$/bu.
Sauce-Slice-Direct	2.35
Sauce-Slice-Mktg. Coop.	2.37
Sauce-Slice-Other	2.14
Juice	1.14
Fresh-Broker	4.38
Fresh-U-Pick	4.68
Fresh-Roadside	4.66
Fresh-Other	<u>3.74</u>
All Processing	2.21
All Processing-Exc. Juice	2.35
All Fresh	<u>4.33</u>
All Markets	2.67

The figures presented in Tables 3 and 4 for sauce-slice processing and juice processing compare favorably with similar statistics recently released by the U.S.D.A. and New York Crop Reporting Service.^{2/} According to these estimates, total processing sales in Western New York during 1974 amounted to 11,165,195 bushels. While this figure is slightly lower than the 11,213,256 bushels reported in this study, it differs by only .4 percent.

Some difference was found between the published juice processing figures and those estimated from the survey sample in this study. The

^{2/} U. S. Department of Agriculture, Statistical Reporting Service and New York Department of Agriculture and Markets, Bureau of Statistics, Apple Processing Industry, July 16, 1975.

Crop Reporting Service reported 2,685,143 million bushels of juice apples for Western New York. This is compared with 1,308,953 bushels reported in the present study. This discrepancy is largely explained by the fact that juice sales in this study include only those apples specifically sold for juice processing. However, the published figures presumably include all apples actually used by processors in juice processing. A processor will often divert some of the apples purchased for sauce-slice processing for juice processing if the sauce-slice production lines are operating at capacity or if more lower quality apples are discovered. This reasoning can also be applied to explain the differences between juice processing prices in this study and those given by the Crop Reporting Service. Estimated juice processing prices in the present study were \$1.14 per bushel for all size groups, whereas, Crop Reporting Service figures indicate juice processing prices of \$1.41 per bushel. If higher priced sauce-slice apples are used for juice purposes the resultant average price will be higher.

Prices for all other processing sales were very similar. The Crop Reporting Service price was \$2.32 per bushel while the price in this study was \$2.35 per bushel. Overall average price, for all processing sales differed by 15 cents per bushel. This difference of 7 percent between the \$2.06 Crop Reporting Service price and the \$2.21 figure reported in this study is also linked to juice processing sales figures. The Crop Reporting Service figures are weighted more heavily in favor of the lower priced juice market than figures presented in this study, hence, the resulting overall average is lower.

Small growers, those with sales of 1-15,000 bushels, numbered 549 or 74.9 percent of the total population of 733 growers. Total estimated sales for these growers amounted to 6.1 million bushels in 1974 which represents 42.9 percent of all sales volume in Western New York. Sales by this group were valued at 17.7 million dollars with an average gross price of \$2.88 per bushel (Table 5).

Table 5
Total Estimated Sales Volume, Dollar Value and Average Price
for all Apples Sold in Western New York by Size Group, 1974

Size-Group	Bushels	Dollars	Avg. Price per bushel
Small	6,163,437	\$17,723,798	\$2.88
Medium	3,791,203	9,949,990	2.63
Large	2,024,955	5,317,356	2.63
Commercial	<u>2,383,466</u>	<u>5,412,362</u>	<u>2.27</u>
TOTAL	14,363,061	\$38,403,506	\$2.67

Medium-size producers (15,001-30,000 bushels) represent 16.5 percent of the growers in Western New York with total estimated sales of 3.7 million bushels, accounting for 26.4 percent of the total, valued at 9.9 million dollars.

In 1974, growers in the "large" classification (30,001-60,000 bushels) had estimated sales slightly over 2 million bushels valued at approximately 5.3 million dollars. The average gross price was the same as medium growers at \$2.63 per bushel. There were only 41 large growers in 1973 representing 5.6 percent of the total population.

Commercial growers, those with sales of over 60,000 bushels, account for only 3 percent of the entire population in Western New York, yet, they marketed 16.6 percent of all apples in this region. Total sales in this group amounted to nearly 2.4 million bushels with an estimated value in excess of 5.4 million dollars. Commercial growers received \$2.27 per bushel for their apples in 1974. This is 40 cents less than the overall average price in Western New York.

One explanation of the higher price received by small growers is that a larger percentage of their sales (30.4 percent) was to fresh fruit markets. Conversely, commercial growers sold 92.3 percent of their fruit to processing markets.

Marketing Costs and Net Prices

To adequately evaluate market alternatives, growers should consider harvesting and marketing costs in addition to selling price. By comparing prices and selling costs, growers can evaluate alternative markets on the basis of net prices. Although market selection is somewhat predetermined in the short run by varieties, storage facilities and location, a comparison of net prices should be useful for expansion and replanting decisions.

Cost data covering all aspects of grower activity from harvest to final disposal of the crop were gathered during the personal interviews. Harvest, storage, and sales costs were isolated and subdivided making possible collection of cost data for each market outlet and sales method. For some items, primarily machinery costs, secondary data were used to make cost estimates.

Actual expenditure figures were collected for all remaining cost factors, including fresh fruit supplies, storage costs, labor camp expenses, harvest labor, commercial trucking, commission and brokerage fees, dipping charges, packing and grading costs, retail outlet overhead and miscellaneous items such as crate liners and picking bag repair materials.

Costs were then divided into three major categories. Shared costs consist of fixed cost items such as taxes, insurance and equipment plus

any costs associated with all apple sales, fresh and processing. Processing costs, the second category, included only those costs associated with the sale of fruit for processing. Different labor rates for apples sold fresh and those sold processing were used to allocate picking labor to the appropriate market. The number of bushels shipped was similarly used to allocate trucking expenses between fresh and processing markets. Generally, picking and trucking were the major cost factors for apples sold to a processor. All miscellaneous factors were combined as other processing costs. Total costs associated with processing sales methods is the summation of shared plus processing costs.

Allocating fresh fruit costs was by far the most cumbersome and difficult task. Some fresh fruit expenses such as storage are applicable to a variety of sales methods. Other cost items, such as supplies for roadside/retail sales, carry over into sales of farm-produced cider which were classified as "other" sales. Commissions and brokerage fees and dipping charges were costs associated with packer/shipper or commission agent sales.

Based on sample data, apple producers in Western New York spent an estimated 13.7 million dollars to harvest and sell their crop in 1974. This amounts to an average of over \$18,000 for each of the 733 growers. Costs per bushel were much higher for most fresh market fruit, the exception being U-pick operations. Very little variation was found among costs associated with alternative processing markets. The largest degree of variation in costs occurs between processing and fresh markets and among the alternative fresh markets (Table 6). Estimated marketing costs ranged from \$.30 per bushel for U-pick sales to \$2.09 per bushel for fresh market sales through brokers. The average cost of marketing all apples was \$.96 per bushel.

Average total costs were also quite variable among size groups (Table 7). Small growers (1-15,000 bushels) reported the highest cost at \$1.12 per bushel. Large growers, those producing 30,001-60,000 bushel sales, were second with an average total cost of 97 cents. Medium growers (15,001-30,000 bushels) ranked third with 83 cents and commercial growers (over 60,000 bushels) had the lowest figure of 72 cents per bushel. It is not surprising to find that commercial growers incurred the lowest total cost. It was this group which reported the largest volume of process market sales. Also it is generally expected that fixed costs per unit decline as volume increases. Conversely, small growers have less volume over which to spread overhead costs and they sell a much higher proportion of their apples for fresh consumption which normally is associated with higher costs. Large growers had a higher average cost of marketing than medium and commercial growers because a greater percentage of their production was marketed through the higher cost fresh market channels.

Average net price - the difference between selling price and cost of marketing - was calculated for each submarket and for each size category. Average net price ranged from \$0.44 per bushel for juice sales to

\$4.38 per bushel for fresh market U-pick sales (Table 6). In all instances net selling price was higher for fresh markets than for processing markets.

Table 6
Average Price Received, Average Cost of Marketing
and Average Net Price of Apples in Western New York
by Submarket, 1974

Submarket	Average Price Received	Average Cost of Marketing	Average Net Price
- - - - - dollars per bushel - - - - -			
Sauce-Slice-Direct	2.35	.67	1.68
Sauce-Slice-Mktg. Coop.	2.37	.70	1.67
Sauce-Slice-Other	2.14	.70	1.44
Juice	1.14	.70	.44
Fresh-Broker	4.38	2.09	2.29
Fresh-U-Pick	4.68	.30	4.38
Fresh-Roadside	4.66	1.63	3.03
Fresh-Other	3.74	1.90	1.84
ALL MARKETS	2.67	.96	1.71

Although small growers had the highest average selling price, they also incurred the highest cost of marketing, resulting in average net prices below those of the medium sized growers (Table 7). Commercial growers had the lowest marketing costs of any group, but on average had lower net prices than any other size group because of lower selling prices. Medium-sized growers enjoyed the highest average net price of any group.

It should be pointed out that two factors which can have an impact on grower returns - time of sale and quality of apples - were not considered in this study. Differences attributed to market outlet and/or size of grower may in part reflect variance in quality of fruit or timing of sale by the sample farms.

Table 7
Average Price Received, Average Cost of Marketing
and Average Net Price of Apples in Western New York
by Size of Grower, 1974

Size Group	Average Price Received	Average Cost of Marketing	Average Net Price
	- - - - - dollars per bushel - - - - -		
Small	2.88	1.12	1.76
Medium	2.63	.83	1.80
Large	2.63	.97	1.66
Commercial	2.27	.72	1.55
ALL GROWERS	2.67	.96	1.71

Summary and Conclusions

The net price realized by Western New York apple growers in 1974 was \$1.52 per bushel for processing apples and \$2.38 for fresh market apples. Average net prices ranged from \$.44 per bushel in the juice market to \$4.89 per bushel in the fresh, U-pick market. Average net prices were lower in all processing markets than in fresh market outlets.

Average net prices were highest for small and medium sized growers. Commercial growers enjoyed the lowest average cost of harvesting and marketing, but also received the lowest average prices of any size group. As a result, this group had average net prices of only \$1.55 per bushel, the lowest of any size group. Small sized growers had marketing costs in excess of large and commercial growers, but were able, on average, to receive higher prices. It is this group which tends to use a wider variety of markets and to take advantage of more of the fresh market alternatives.

The major results of this study indicate that growers in Western New York should be producing and selling more apples for the fresh market, particularly through U-pick and roadside operations. It is recognized that there are limitations to the amount of fruit which can be marketed through these channels. However, the implication is that returns can be increased by taking advantage of marketing situations where the grower has more price-making control. Those tend to be the small volume, higher service markets limited only by the grower's imagination.

A second major conclusion of this study is that small and medium sized apple growers are able to more than offset some of the economies of size enjoyed by the large and commercial growers by exercising a

greater number of marketing options. Commercial growers sold 84 percent of their apples directly through the processor and only a total of 9 percent to the fresh market. Small growers sold 55 percent of their apples directly to the processor and a total of 30 percent to the various fresh markets. The use of a greater number of marketing options by small growers relative to larger growers is contrary to the hypothesis used to justify a greater sampling rate for large growers.

A major factor which has not been considered in this study is the cost of producing apples for the various markets. There is substantial evidence that the cost of producing apples for the processing market is less than the cost of producing for the fresh market. In addition, higher yields are generally attainable with processing varieties. These two factors would tend to offset some of the net price advantage enjoyed by the fresh market.