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FARMERS, TRUCKERS, AND PROCESSORS:
SOME CHARACTERISTICS OF RURAL MARKETING AMONG SELECTED
COMMODITIES IN PUERTO RICO

By

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During the period June 1965 to July 1969 interdisciplinary research teams from Michigan State University conducted a series of comparative studies on food marketing systems in four selected Latin American communities: Puerto Rico; Recife, Brazil; LaPaz, Bolivia; and the Cauca Valley Region, Colombia. The major goals of the research studies were:

- . to describe the exchange process for food and selected consumer goods.
- . to analyze the food marketing systems in terms of their structure, conduct, and performance in order to identify needed changes for greater market coordination and improved performance.
- . to prescribe a set of marketing reform programs which might assist developing countries in stimulating regional economic development.

Field research operations were first conducted in Puerto Rico in 1965 and 1966. The research design for the Puerto Rico study was comprehensive in scope and included all major participants in the food marketing channels (e.g. farmers, truckers, processors, wholesalers, retailers, consumers), as well as facilitatory marketing services and institutions (e.g. credit, governmental regulations and programs, cooperatives).

Kelly Harrison, under the directions of Dr. Harold Riley and Dr. Charles C. Slater, supervised the Puerto Rico data collection related to rural food marketing participants. For nearly one year Harrison resided in Puerto Rico analyzing relevant secondary data and conducting in-depth interviews with Puerto Rico government officials, rural marketing participants, and

other knowledgeable individuals in the area of marketing. In addition, Harrison designed and supervised the implementation of field surveys among selected farmers, truckers, and food processors, focusing on their personal characteristics, marketing practices, and attitudes toward their social and economic environment

A by-product of this research experience was Dr. Harrison's thesis submitted in 1966, entitled Agricultural Market Coordination in the Economic Development of Puerto Rico. In his thesis Harrison discusses the evolutionary changes in agricultural marketing processes since 1950 and the manner in which these have effected market coordination and performance. To illustrate these changes and their effect, he provides a detailed analysis of three key commodities: milk, eggs, and fruits/vegetables. He also utilizes survey data to explore the relationship agricultural productivity, innovation, marketing practices, and a variety of specific farmer attitudes and attributes.

This paper compiles all of the data Dr. Harrison collected from the survey research conducted among selected Puerto Rican farmers, truckers, and processors. These data are presented in tabular form and each table is summarized, briefly stating the most important findings.

INTRODUCTION

This paper presents the results of field interviews conducted in the Fall of 1965 and Winter of 1966 among Puerto Rican farmers, truckers, and processors. Each type of respondent was asked questions which were appropriate to his occupation, but all interviews were composed of four general sections: (1) economic aspects of the firm or operation, (2) personal characteristics of the operators, (3) attitudes toward economic environment and modernization and (4) communication habits of the respondents.

The organization of this paper follows closely the organization of the questionnaires used with the exception that relevant communication characteristics dealing with price information, etc. are included under economic aspects of respondents.

The results of the survey was confined to the western end of the island in the Mayaguez region. The area was chosen because the Department of Agriculture had initiated their regional plan for agricultural program coordination there. Therefore, considerable information was available from previous studies in the region. Also, the producer marketing associations described and analyzed elsewhere were concentrated in the Mayaguez area. Thus, it was possible to observe and compare association member farmers and non-member farmers.

The sample design provided for the random selection of approximately 100 association member farmers and 100 non-member farmers. The association member sample was drawn from lists provided by the associations, while the non-member sample was drawn from lists provided by the Department of Agriculture.

The Department of Agriculture had complete lists of milk and egg producers in the region, but only had an area sample list of fruit and vegetable producers. Therefore, a sub-sample

of non-member fruit and vegetable producers was drawn for the purpose of this survey. Because of interviewing difficulties and limitations of the original listings, the number of completed interviews was reduced to 172, about 28 less than had been planned.

It should be noted that because of the decision to interview about equal numbers of association member farmers and non-member farmers, a disproportionate number of milk, egg, pineapple, papaya, and orange producers were interviewed. No attempt has been made to correct this inequality.

The trucker respondents were chosen with a quota sampling technique from among those arriving at the two major market plazas in the metropolitan San Juan area. Research staff members were assigned to the markets of Rio Piedras and Bayamon on a number of consecutive days for a set period of time in the early morning hours. During this period each team chose every n-th trucker that arrived and arranged to administer the interview at the trucker's convenience. This process was repeated until the desired quota of truckers was met. A total of 57 interviews were successfully completed.

The processor respondents included all of the milk processors on the island and most of the vegetable and fruit processors. In addition, two poultry processors were included. A total of 33 processors were interviewed.

Economic Aspects of
Farmers, Truckers, and Processors

Farmers

Type and Size of Farms - The farmer sample included 85 members of producer association groups and 87 non-members. The majority of farmers questioned produced only one of the five commodities studied (milk, eggs, starchy vegetables*; other vegetables, and fruits). Of those who produced more than one of the commodities, the most common combination was starchy vegetables and fruits.

Over four-fifths of the farmers questioned owned their farms, about 10% were farm administrators, and the remaining 8% rented. There was no great variation between association members and non-members with regard to land tenure (Table 7.1).

TABLE 7.1. ASSOCIATION MEMBERSHIP RELATED TO
LAND TENURE AND FARM ACREAGE.

	<u>Association Members</u>	<u>Non-Association Members</u>
	(percent)	
Land Tenure		
Owner	81.20	83.90
Renter	9.40	5.80
Administrator	8.20	10.30
Non-Answer	1.20	0.00
	100.00	100.00
 Farm Size in Acres		
Less than 3	8.24	19.54
3 to 9	7.06	9.20
10 to 19	8.24	12.64
20 to 39	10.59	14.94
40 to 59	9.41	8.05
60 to 99	7.06	6.90
100 to 199	21.16	10.34
200 or more	28.24	18.39
	100.00	100.00

* starchy vegetables include such vegetables as Cassava, Malanga, Plantain and Yams.

Farm acreage was generally larger for association members than for non-members (Table 7.1). Almost half of the association members had holdings of 100 acres or more, and over a fourth of the members had 200 acres or more. Conversely, over half (56%) of the non-association members had farms of less than 40 acres, and 20% had less than 3 acres.

Dairy farms were the largest farms in the sample, followed by egg, fruit, and vegetable farms, in that order. Association members producing milk had larger operations than non-members. This fact is indicated by 73% of association members having gross milk sales of \$20,000 or more compared to 54% of the non-members reporting milk sales of \$20,000 or more (see Table 7.2). Median sales for association members was \$26,200 and \$21,650 for non-members.

TABLE 7.2. ASSOCIATION MEMBERSHIP RELATED TO GROSS MILK SALES.

<u>Gross Sales (1964)</u>	<u>Association Members</u>		<u>Non-Association Members</u>	
	Number	Percent	Number	Percent
Less than \$999	1	3.03	1	4.17
\$ 1,000 to \$ 1,999	0	-0-	0	-0-
\$ 2,000 to \$ 4,999	0	-0-	1	4.17
\$ 5,000 to \$ 9,999	1	3.03	4	16.66
\$10,000 to \$19,999	7	21.21	5	20.83
\$20,000 to \$39,999	14	42.43	9	37.50
\$40,000 to \$79,999	5	15.15	1	4.17
\$80,000 or more	<u>5</u>	<u>15.15</u>	<u>3</u>	<u>12.50</u>
TOTAL	33	100.00	24	100.00
AVERAGE GROSS SALES	\$35,651.57		\$37,202.50	
MEDIAN SALES	\$26,200.00		\$21,650.00	

Egg producer association members also had larger operations than non-members. Over 75% of association member egg producers had gross sales of \$5,000 or more, while only 41.8% of non-members reported sales in this category (see Table 7.3). Average gross sales and median sales of eggs were nearly twice as large for association members than for non-members.

TABLE 7.3. ASSOCIATION MEMBERSHIP RELATED TO GROSS EGG SALES.

<u>Gross Sales (1964)</u>	<u>Association Members</u>		<u>Non-Association Members</u>	
	Number	Percent	Number	Percent
Less than \$1,000	2	6.89	3	11.54
\$ 1,000 to \$ 1,999	4	13.79	2	7.70
\$ 2,000 to \$ 4,999	1	3.46	10	38.46
\$ 5,000 to \$ 9,999	10	34.49	8	30.76
\$10,000 to \$19,999	7	24.14	2	7.70
\$20,000 to \$39,999	3	10.34	1	3.84
\$40,000 to \$79,999	2	6.89	0	-0-
\$80,000 or more	<u>0</u>	<u>-0-</u>	<u>0</u>	<u>-0-</u>
TOTALS	29	100.00	26	100.00
AVERAGE GROSS SALES	\$11,068.97		\$5,703.84	
Median Gross Sales	\$ 8,200.00		\$4,300.00	

Average gross sales and median sales of fruits and vegetable producers were very small compared to either egg or milk producer sales. Median sales of fruit and vegetable producers were about the same for association members as non-members, but average gross sales for fruit and vegetable producers were about three times greater for association members than for non-members (Tables 7.4, 7.5 and 7.6).

Non-Farm Activities - The majority of respondents (78.47% were principally farmers or farm administrators, 12.85% were professional practitioners, and the remaining 8.68% were employed as white collar workers, skilled laborers, or in other jobs. Almost 30% of association members and non-members reported that they worked off the farm part of the year. Those engaged in off-farm employment worked an average of 209 days per year. There was very little difference between association members and non-members with regard to off-farm employment or principal occupation (Table 7.7).

Linkage with Urban Centers - The sample indicated that urban centers were accessible to most farmers. Two-thirds of the farms were on paved roads, one-tenth were on secondary, stone or graveled surfaced roads, and about one-fourth were on dirt roads. Only 3% were not located on a road. Two-thirds of the respondents said that it took between 10 and 45 minutes to reach the urban center where they did the major portion of their purchasing. Almost one-fifth said it took less than 10 minutes. When asked about the frequency of trips, the reply given most often was "once a day." The average frequency for all respondents was slightly higher than once a day, being 8.7 trips per week. Thus, most farmers were well connected with urban trading centers (Table 7.8).

Marketing Practices - The marketing practices and market channels used vary among the commodities studied. Almost all milk is sold to processors. No milk was reportedly sold to retailers. Less than 1% was sold directly to the consumer.

TABLE 7.4. ASSOCIATION MEMBERSHIP RELATED
TO GROSS STARCHY VEGETABLE SALES

<u>Gross Sales (1964)</u>	<u>Association Members</u>		<u>Non-Association Members</u>	
	Number	Percent	Number	Percent
Less than \$999	14	63.64	30	83.33
\$ 1,000 to \$ 1,999	2	9.09	6	16.67
\$ 2,000 to \$ 4,999	4	18.18		
\$ 5,000 to \$ 9,999	2	9.09		
\$10,000 to \$19,999				
\$20,000 to \$39,999				
\$40,000 to \$79,999				
\$80,000 or more	—	—	—	—
TOTALS	22	100.00	36	100.00
AVERAGE GROSS SALES		\$1,622.73		\$591.67
MEDIAN SALES		\$ 550.00		\$400.00

TABLE 7.5. ASSOCIATION MEMBERSHIP RELATED TO GROSS OTHER VEGETABLE SALES

<u>Gross Sales</u>	<u>Association Members</u>		<u>Non-Association Members</u>	
	Number	Percent	Number	Percent
Less than \$999	3	75.00	4	100.00
\$ 1,000 to \$ 1,999				
\$ 2,000 to \$ 4,999				
\$ 5,000 to \$ 9,999				
\$10,000 to \$19,999	1	25.00		
\$20,000 to \$39,999				
\$40,000 to \$79,999				
\$80,000 or more				
TOTALS	4	100.00	4	100.00
AVERAGE GROSS SALES		\$3,225.00		\$450.00
MEDIAN SALES		\$ 5,550.00		\$350.00

TABLE 7.6. ASSOCIATION MEMBERSHIP RELATED TO GROSS FRUIT SALES

<u>Gross Sales</u>	<u>Association Members</u>		<u>Non-Association Members</u>	
	Number	Percent	Number	Percent
Less than \$1,000	15	65.22	8	80.00
\$ 1,000 to \$ 1,999	2	8.70	2	20.00
\$ 2,000 to \$ 4,000	5	21.74		
\$ 5,000 to \$ 9,999				
\$10,000 to \$19,999	1	4.35		
\$20,000 to \$39,999				
\$40,000 to \$79,999				
\$80,000 or more	—	—	—	—
TOTALS	23	100.00	10	100.00
AVERAGE GROSS SALES		\$1,547.83		\$630.00
MEDIAN SALES		\$ 500.00		\$400.00

TABLE 7.7. ASSOCIATION MEMBERSHIP RELATED TO OFF FARM WORK AND PRINCIPLE OCCUPATION.

	<u>Association Members</u>	<u>Non-Association Members</u>
	(percent)	
Percent reporting working off-farm.	29.41	29.84
Average Number of days worked off-farm of those so engaged.	214	203
Principle Occupation		
Farmer	72.94%	72.41%
Farm Administrator	3.53	8.05
Professional	10.59	2.30
Owner of Other Business	7.06	5.75
White Collar Worker	2.35	5.75
Skilled Laborer	1.18	1.15
Other	<u>2.35</u>	<u>4.60</u>
TOTALS	100.00	100.00

TABLE 7.8. ASSOCIATION MEMBERSHIP RELATED TO ROAD FACILITIES AND TIME REQUIRED TO TRAVEL TO MAJOR PURCHASING CENTER.

<u>Type of Road by Farm House</u>	<u>Association Members</u>	<u>Non-Association Members</u>
	(percent)	
Paved	70.59%	62.07%
Stone	8.24	10.34
Dirt	20.00	22.99
Not on Road	<u>1.18</u>	<u>4.60</u>
TOTALS	100.00%	100.00%

Time Required to
Travel to City or
Town where major
part of purchasing
is done.

Less than 10 minutes	21.18%	16.09%
10 to 19 minutes	28.24	35.63
20 to 29 "	12.94	11.49
30 to 44 "	15.29	26.44
45 to 59 "	11.76	3.45
60 to 89 "	8.24	4.60
90 or more	2.35	1.15
No answer	<u>-0-</u>	<u>1.15</u>
TOTALS	100.00%	100.00%

There was no significant difference between association members and non-members with regard to market channels used for fluid milk (see Table 7.9.)

TABLE 7.9. AMOUNT OF MILK SALES BY FARMERS THROUGH SELECTED MARKET CHANNELS BY ASSOCIATION MEMBERSHIP.

<u>Market Outlet</u>	<u>Association Members</u>		<u>Non-Association Members</u>	
Processor	\$1,107,380.	94.14%	\$833,900.	93.40%
Consumer	120,120.	.01	1,900.	.21
Retailer	--	--	--	--
Other Farmers	--	--	--	--
Others	--	--	57,000.	6.38
No answer	<u>69,000.</u>	<u>5.85</u>	<u>60.</u>	<u>.01</u>
TOTALS	\$1,176,500.	100.00	\$892,860.	100.00

The market channel used for egg production varied greatly between association members and non-members. Association members reported selling over 97% of their eggs to a cooperative or association, while non-members sold only 15% of their egg production to such an organization. Non-members sold most (59%) of their eggs to retailers, and a fairly large part (18%) to neighbors or at a roadside stand (see Table 7.10).

Starchy vegetable producers used more varied outlets than did milk or egg producers. Although truckers were the most important market for both association members and non-members, accounting for about 46% and 36%, respectively, association members' next most important channels were cooperatives (26%) and processors (8%). Non-members, on the other hand, reported sales to wholesalers (26%) and retailers (25%) as their next most important markets (see Table 7.11). Truckers were

TABLE 7.10. AMOUNT OF EGG SALES BY FARMERS THROUGH
SELECTED MARKET CHANNELS BY ASSOCIATION
MEMBERSHIP.

<u>Market Outlet</u>	<u>Association Members</u>		<u>Non-Association Members</u>	
Neighbors	\$ 2,606.00	.81%	\$ 21,010.	14.17%
Roadside	408.00	.13	6,400.	4.32
Truckers	--	--	--	--
Retailers	6,267.00	1.95	86,970.	58.64
Wholesalers	--	--	2,400.	1.62
Deliver to Consumer	--	--	2,520.	1.70
Co-op or Assoc.	311,719.00	97.11	23,000.	15.51
Other	<u>--</u>	<u>--</u>	<u>6,000</u>	<u>4.05</u>
TOTALS	\$321,000.00	100.00	\$148,300.	100.00

also the most important market channel for other vegetables. Association members reported 57% of total sales to truckers (farmer harvest) and 36% to retailers. Non-members' total sales were 75% to retailers, 17% to truckers (trucker harvest) and 8% to truckers (farmer harvest) (see Table 7.12).

The three most important market channels for all fruits were wholesalers (35%), truckers (23%), and processors (10%). However, it is interesting to note that non-association members did not sell any fruit to wholesalers, while association members moved 41% of their fruit sales through this channel. Non-members relied most heavily on truckers (41%) (See Table 7.13).

TABLE 7.11. AMOUNT OF STARCHY VEGETABLE SALES BY FARMERS THROUGH SELECTED MARKET CHANNELS BY ASSOCIATION MEMBERSHIP.

<u>Market Outlet</u>	<u>Association Members</u>		<u>Non-Association Members</u>	
Trucker (Farmer Harvest)	\$16,600.	46.50%	\$ 7,710.	36.20%
Trucker (Trucker Harvest)	1,300.	3.64	1,500.	7.04
Wholesaler	2,200.	6.16	5,460.	25.63
Processor	700.	3.29	3,000.	8.40
Co-op	9,200.	25.77	500.	2.35
Retailer	2,800.	7.84	5,340.	25.07
Concentration Point	600.	1.68	--	--
Others	<u>--</u>	<u>--</u>	<u>90.</u>	<u>.42</u>
TOTALS	\$35,700.	100.00	\$21,300.	100.00

TABLE 7.12. AMOUNT OF OTHER VEGETABLE SALES BY FARMERS THROUGH SELECTED MARKET CHANNELS BY ASSOCIATION MEMBERSHIP

<u>Market Outlet</u>	<u>Association Members</u>		<u>Non-Association Members</u>	
Trucker (Farmer Harvest)	\$7,400.	57.36%	\$ 150.	8.33%
Trucker (Trucker Harvest)	-0-	-0-	300.	16.67
Wholesaler	-0-	-0-	-0-	-0-
Processor	-0-	-0-	-0-	-0-
Co-op	240.	1.86	-0-	-0-
Retailer	4,600.	35.66	1,350.	75.00
Concentration Point	300.	2.33	-0-	-0-
Others	<u>360.</u>	<u>2.79</u>	<u>-0-</u>	<u>-0-</u>
TOTALS	\$12,900.	100.00	\$1,800.	100.00

TABLE 7.13. AMOUNT OF FRUIT SALES BY FARMERS THROUGH
SELECTED MARKET CHANNELS BY ASSOCIATION
MEMBERSHIP.

<u>Market Outlet</u>	<u>Association Members</u>		<u>Non-Association Members</u>	
Trucker (Farmer Harvest	\$7,330.	20.59%	\$ 900.	14.29%
Trucker (Trucker Harvest)	1,000.	2.81	1,700.	26.98
Wholesaler	14,600.	41.01	-0-	-0-
Processor	4,130.	11.60	100.	1.59
Co-op	3,250.	9.13	-0-	-0-
Retailer	2,060.	5.79	500.	7.94
Concentration Point	-0-	-0-	-0-	-0-
Other	<u>3,230.</u>	<u>9.07</u>	<u>3,100.</u>	<u>49.21</u>
TOTALS	\$35,600.	100.00	\$6,300.	100.00

Association members reported having contracts or agreements for sale of their commodities to a significantly greater degree than non-members (see Table 7.14). Moreover, those commodities in which a greater degree of vertical coordination has been achieved, e.g., milk and eggs, were also the ones for which contracts or sales agreements were most often reported.

TABLE 7.14. RESPONDENTS HAVING CONTRACTS OR AGREEMENTS FOR SALE OF PRODUCT IN RELATION TO ASSOCIATION MEMBERSHIP BY COMMODITY.

<u>Commodity</u>	<u>Association Members</u>		<u>Non-Association Members</u>	
	Number	Percent	Number	Percent
Milk Producers	33	100. %	24	100. %
Egg Producers	25	86.2	7	27
Starchy Veg. Producers	5	22.7	3	8.3
Other Veg. Producers	1	25	-0-	-0-
Fruit Producers	<u>10</u>	43.5	<u>1</u>	10
	74		35	

Note: There are a total of 211 enterprises reported so that the absolute numbers above refer to enterprises and not number of respondents.

Market Price Information - Producers of fruits and vegetables reported that their principal sources of price information were visits to markets, radio programs, and truckers (see Tables 7.15 and 7.16). Association members tended to rely more heavily on market visits and associations for vegetable price information, while non-members tended to visit markets to a lesser extent and to use radio, truckers, and other farmers for price

TABLE 7.15. PRINCIPAL SOURCE OF PRICE INFORMATION
FOR PRODUCERS OF STARCHY VEGETABLES
RELATED TO ASSOCIATION MEMBERSHIP.

<u>Principal Source of Price Information</u>	<u>Association Members</u>		<u>Non-Association Members</u>	
	Number	Percent	Number	Percent
Newspapers	1	4.54	3	8.33
Radio	1	4.54	8	22.22
Visits to Market	12	54.55	14	38.89
Truckers	1	4.54	5	13.89
Farmers	1	4.54	4	11.11
Others (Not farmers)	0	-0-	1	2.78
Co-op or association	4	18.19	1	2.78
Others	<u>2</u>	<u>9.10</u>	<u>0</u>	<u>-0-</u>
TOTALS	22	100.00	36	100.00

TABLE 7.16. PRINCIPAL SOURCE OF PRICE INFORMATION FOR
FRUIT PRODUCERS RELATED TO ASSOCIATION
MEMBERSHIP.

<u>Principal Source of Price Information</u>	<u>Association Members</u>		<u>Non-Association Members</u>	
	Number	Percent	Number	Percent
Newspaper	1	4.35	0	
Radio	2	8.69	2	20.00
Visits to Market	8	34.79	2	20.00
Truckers	3	13.04	2	20.00
Farmers	4	17.40	3	30.00
Other (Not Farmers)	0	-0-	0	-0-
Co-op or Association	2	8.69	0	-0-
Others	<u>3</u>	<u>13.04</u>	<u>1</u>	<u>10.00</u>
TOTALS	23	100.00	10	100.00

information. There was not as much difference in source of price information for fruit producers between association members and non-members, although the same general pattern existed as with vegetables.

Summary of Economic Aspects for Farmers - In general, the farmers interviewed were well integrated into the money economy. Most farmers owned their farms, over half of which were 40 acres or more in size. Less than 13.9% reported holdings of less than 3 acres.

The size of operation, based on annual gross dollar sales, varied considerably among commodities studied. Milk production enterprises were the largest operations; egg production enterprises were the next largest type, but were considerably smaller than milk operations. Starchy vegetables, other vegetables, and fruit production enterprises were homogeneous in size, but all were much smaller than milk or egg production operations. The difference in the size of operation among the five commodities is not surprising, given the nature of the commodities involved and the fact that milk and egg production tend to be principal farm enterprises, while vegetable and fruit production are in many cases secondary or supplemental farm enterprises.

The majority of respondents were full-time farmers. Those who worked off the farm were usually employed full-time off the farm. There were very few respondents who supplemented their income with part-time off-farm jobs.

The farmers interviewed reported that urban trading centers were easily accessible, and most of them visited such a center frequently.

The market channels which farmers used varied from commodity to commodity. The high percentage of milk which was sold to processors reflects the high degree of government milk regulation discussed earlier. Government standards and producer organizations are also responsible for the high percentage of egg sales moving through cooperatives or producer associations.

Market channels for vegetable and fruit producers tend to be more diverse than for milk or egg producers. Vegetables, both starchy and other types, tend to be sold through the traditional market channels of truckers or retailers. Fruit market channels are also traditional, with most fruit moving through truckers and wholesalers.

Price information for milk and eggs is readily available to producers through processors and associations. The price for these commodities is fairly stable and day-to-day prices are not as critical for the farmer as are prices of vegetables and fruits. Vegetable and fruit producers rely on market visits to keep abreast of prices, although radio, truckers, and other farmers are important sources of price information.

When the respondents are broken into two groups--association members and non-members--it appears that association members hold larger farm acreage and run larger enterprises. Average gross sales were greater for association members for all commodities except milk, for which non members' average gross sales were only slightly larger. Annual gross median sales were larger for members for all commodities. Association members also reported a greater propensity to enter into sales contracts or agreements for their commodities than did non-members. This would indicate the willingness of the association members to try new marketing arrangements.

Association members also reported less dependency on traditional market channels for eggs, vegetables, and fruits than did non-members. Almost all association member egg production (97%) was sold through cooperatives or associations, while 59% of non-member egg production was sold to retailers. Although both association members and non-members who produce vegetables and fruit tend to depend on traditional outlets (truckers, wholesalers, and retailers), association members reported significantly more sales through more modern channels such as processors and cooperatives. It is also worthwhile to note that association members who sold their vegetables and fruit to truckers usually harvested before sale. On the other hand,

non-members more often sold their vegetables and fruit to a trucker and let the trucker harvest. The latter is a more traditional form of sale.

Association members tended to rely mostly on visits to the market or cooperatives for their principal source of price information. Non-members reported market visits as their principal source of price information to a lesser extent and depended also on radio, truckers, and other farmers. Thus, there is a greater dependency on secondary sources for price information among non-members than among members.

There was very little difference between association members and non-members with regard to land tenure situations, non-farm activities, and linkage with urban trading centers.

Truckers

Economic Characterisitcs - The majority (88%) of the 57 respondents interviewed were truckers who bought and sold agricultural commodities, and the other 12% were farmers who engaged in such operations. About 37% of the truckers said they spent all their working time buying and selling fruits and vegetables, and about 44% said that this operation involved more than half, but less than all of their working time. The remaining one-fifth spent less than half their time buying and selling food commodities.

Of those respondents who did not spend full time buying and selling food commodities, 38% reported no other job, 14% worked part time at the market or at a food store, 6% were in the moving business, and 40% were otherwise employed part time.

Eighty-two percent of the truckers owned only one vehicle and none of the respondents reported owning more than two. The most common type of vehicle was a flatbed-stake body truck of 1 to 2 1/2 tons in size, which 43% of the respondents operated. The next most common vehicle was the 3/4 ton "pickup" truck, reported by 39% of the respondents. Jeep type vehicles accounted for 11% of the vehicles reported. The remining 7% were either special ~~XXXXXX~~ vans or very large (over 2 1/2 ton) truckers.

Most of the vehicles (61%) had no cover for the produce, only 37% had tarpaulin-type covers, and 2% had a permanent wood or metal body.

Fifty-one percent of the truckers employed one helper, 14% employed two helpers, and none reported more than two. About one-third had no helpers.

Buying and Marketing Practices - The trucker traveled an average of 39.8 miles to pick up his load on the day prior to the interview. About 47% of the respondents stopped at only one or two places to pick up their loads for the day; an equal portion stopped at three to five places.

Seventy-four percent of the truckers had collected some of the day's load of commodities from fars, 54% had collected from roadside centers, and about 7% said they collected some of their load of commodities from concentration points.

Two-thirds of the truckers interviewed said they had not signed any contracts or bought any crops in advance during the past year. Most of the respondents (72%) paid for the products at the time of purchase, 5% paid the producer after it was sold, and about 20% used some combination of the two methods of payment.

Of the 82% of the respondents who traded in tubers (yautia, yams, etc.), almost all said they packed them in bags (91%), 51% said they graded by size and quality before sale, and only a few washed the tubers (12%).

Sixty-nine percent of the truckers sold some of the produce to stands at the marketplace. Thirty-nine percent sold some produce to wholesalers and 25% sold some to other truckers. Only 11% of the truckers sold any commodities to supermarkets or foodstores, and very few (4%) sold to large supermarkets. Over one-fourth (28%) sold exclusively to wholesalers and at market stands.

Eighty-one percent of the respondents indicated that they went to San Juan or Mayaguez with their products twice a week or more. Twenty-three percent reported that they sold products at markets in San Juan other than the one at which they were interviewed. Forty-seven percent said they sold in other cities and

villages. None of the truckers reported taking products to sell directly to a retailer.

Seventy percent of the respondents reported that they had suffered losses during the past year due to a decrease in price after they had purchased products. Forty-nine percent of the losses suffered were between \$100 and \$400.

Almost all (93%) reported that they would sell their produce even if prevailing prices were "too low." Only 5% said they would return home without selling the product.

Ninety-one percent of the truckers reported that their information about minor fruit prices was obtained principally through trips to the market. Of the 61% knowing of some radio program about minor fruit prices, 69% believed it was generally of some use.

Processors

Type of Operation - Forty-five percent of the 33 processors interviewed processed milk; one-third of these milk processors also processed cheese. Twenty-one percent of the respondents processed fruits and vegetables, and 18% processed only fruits. Meat and poultry processors accounted for about 12% of the processors interviewed.

Only about 30% of the processors interviewed participated in any other food business besides processing, 12% had agricultural production enterprises, and 18% were involved in transportation, wholesaling, or acting as a commission agent for foods not processed by the firm.

Forty percent of the processors had their businesses organized as a family corporation. About 27% had established themselves on a non-corporate form based on an individual or family. Another 24% were non-family corporations in structure, and the remaining 9% of the processing firms were cooperatives.

Twenty-eight percent of the processing firms were established before 1940, and 48% were established between 1940 and 1960. The remaining 24% were established between 1960 and 1965.

Capitalization and Finance - The most important source of funds for expansion for the processors was profits generated from their own businesses. Forty-eight percent used self-generated profits, while 18% had received loans from Fomento. The remaining processors had received funds from commercial loans (12%), personal savings or inheritance (9%), and other sources (13%). Government incentives in the form of tax exemptions played a minor part in the expansion of these processors.

In order to convey some idea of the processors' operations, each type of processor--milk, fruits and vegetables, and poultry--is briefly described.

Milk Processors - The 15 milk processors interviewed reported buying milk from a total of 717 producers, which is about 97% of the total number of first-class dairy farms reported in 1964-65. Only 2 of the 15 milk processors said they had trouble getting a sufficient volume of milk for their plants, and they were soliciting new producers.

The processors reported discontinuing buying from five milk producers last year (1965) because of inferior quality milk. Nine of the processors had lost some milk in the year prior to the interview (1964) due to spoiled milk received from the producers. The total amount of milk lost due to spoilage was 167,000 gallons--estimated to be about 0.25% of the total amount purchased by the 15 processors. None of the processors interviewed reported any incentive system of better prices to producers for improved milk quality.

One-third of the processors said they provided technical help to their producers on production problems, and 60% said they would help provide credit to improve or increase the milk production of their producers. None of the processors were involved in providing feed or venterinary products.

Marketing Practices - Two-thirds of the processors were involved to some extent in retail home delivery of milk. Less than half of the processors sold to large retail supermarkets, while four-fifths sold some of their milk to small supermarkets

and food stores. Restaurants and institutions were markets for about 40% of the processors. The largest percentage of total sales is probably to small supermarkets and food stores; the next largest percentage of sales is to home consumers, followed by large supermarkets, restaurants and institutions, and other outlets.

Business Practices. The milk processors interviewed were asked about the applicability and adoption of selected business practices. The practices and responses are summarized in Table 7.17. The majority of processors indicated that all eight of the suggested practices were applicable, and five of the practices had been adopted by more than half of the processors at some time in the past. However, only two of the practices were still in use by 60% of the processors--bulk tank pickup and ultra high temperature flash pasteurization. Forty percent of

TABLE 7.17. ADAPATION OF SELECTED BUSINESS PRACTICES BY MILK PROCESSORS.

<u>Practice</u>	Response (Percent Saying Yes)			
	<u>Is the Practice Applicable?</u>	<u>Has it Been Adopted?</u>	<u>Mean Year Adopted?</u>	<u>Is it Now Used?</u>
1. Bulk Tank Pick-up	87%	60%	1959	60%
2. Lines cleaned in place automatically	93	60	1962	40
3. Standardization to specific butterfat	100	33	1960	7
4. Ultra high temperature flash pasteurization, or HTST	100	67	1951	60
5. Flavor remover	67	27	N.A.	-0-
6. Refrigerated Delivery Trucks	67	53	1951	40
7. Automatic casing of bottles	67	27	1962	7
8. Products manufactured other than whole milk, such as buttermilk, cheeses, etc.	73	53	1960	13

of the milk processors cleared lines in place automatically and used refrigerated delivery trucks. Flavor remover, standardization of specific butterfat, and automatic casing of bottles were never adopted by many of the processors and were still in use by very few of the processors.

Fruit and Vegetable Processors - The 14 fruit and vegetable processors reported a total of 18 commodities processed. Truckers were the most important source of supply for most of the widely processed commodities. Farmers were the next most important source of supply. One processor received peaches and pears directly from the United States for processing. Two items, onions and sesame, were purchased from wholesalers for processing (see Table 7.18).

About 42% of the processors said they had contracts with some of the farmers from whom they bought produce. Eighty-three percent of the contracts were verbal and 17% were written. The most common provision of the contracts was a "set price," and provisions for maximum or minimum quantities were also prescribed in half of the contracts were verbal and 17% were written. The most common provision of the contracts was a "set price," and provisions for maximum or minimum quantities were also prescribed in half of the contracts. Only the written contracts called for specific cultivation practices and harvest time.

Twenty-one percent of the fruit and vegetable processors reported offering technical assistance and production credit to farmers.

When asked what the principal problems in buying and selling fruits and vegetables were, a variety of responses were given. Twenty-one percent of the fruit and vegetable processors named high prices as the major problem, and about 14% named competition as the major problem. The majority (78%) of the respondents thought that the government or the industry itself could improve the production and marketing system for the products they processed.

Marketing Practices - Gross annual sales (1965) for all fruit and vegetable processors interviewed totaled \$17,859,600. Median gross sales were \$630,750 and average gross sales were \$1,275,685 for the respondents.

TABLE 7.18. COMMODITIES PROCESSED AND SOURCE OF SUPPLY TO PROCESSORS IN PUERTO RICO.

Commodity	Number of Processors Reporting	Source of Supply		
		% from own farm	Percent Directly From Farmer	Percent Direct From Trucker
Oranges	5	--	20%	80%
Grapefruit	4	--	20	80
Pigeon Peas	4	--	20	80
Guava	4	--	50	50
Papaya	4	--	75	25
Coconut	3	--	33	67
Mangos	2	--	10	90
Yams	2	--	--	100
Bananas	2	--	50	50
Pineapple	2	50	--	50
Pumpkin	1	--	100	--
Sweet Pepper	1	--	100	--
Sesame	1 ^a	--	--	--
Peaches	1 ^b	--	--	--
Pears	1 ^b	--	--	--
Onions	1 ^a	--	--	--
Plantano	1	--	100	--
Tomatoes	1	--	100	--

^a100% from wholesaler.

^b100% from U.S.A.

About three-fourths (73%) of total sales volume carried the processor's own trademark, and the remaining 28% carried the buyer's trademark.

Only 17% of the total sales volume was exported, and the remaining 83% was for Puerto Rican consumption. The volume of sales through selected channels for Puerto Rican distribution are summarized in Table 7.19.

TABLE 7.19. GROSS SALES VOLUME OF PUERTO RICAN FRUIT AND VEGETABLE PROCESSORS BY SELECTED CHANNELS FOR ISLAND DISTRIBUTION

Market Channel	Gross Sales (dollars)	% of Total
Large Supermarkets	\$ 1,794,400	12.1%
Other Supermarkets and Food Stores	852,100	5.75
Wholesalers	9,313,342	62.81
Brokers	544,400	3.67
Institution	224,442	1.51
No Answer	<u>2,100,000</u>	<u>14.16</u>
Total Sales in Puerto Rico	\$14,828,685	100.00%
Total Sales for Export	<u>3,030,915</u>	
Total Sales	\$17,859,600	

Meat and Poultry Processors - The poultry processors interviewed reported operating 12 months a year and had an average work force of 86 persons. The average number of birds killed was 600,000 per year. About 90% of the live chickens were supplied by producers under contract, and the remaining 10% were produced on farms operated by the processor.

The contracts between the poultry processor and producers specified production techniques and prices, and in some cases the

contract provided for credit, feed, and medicine. None of the contracts had any provisions for loss due to sickness of the birds.

All of the processed poultry was sold under the processor's trademark. About two-thirds was sold to large supermarkets. The remainder was divided between butcher shops (18%) and other supermarkets and food stores (14%).

Summary of Economic Aspects of Processors - Milk, fruit and vegetable, and poultry processors were interviewed. Sixty-seven percent of enterprises were owned by an individual or family, while about 24% were non-family corporations in structure and 9% were cooperative establishments.

Seventy-five percent of financing for production or expansion came from self-generated profits or personal sources; Fomento accounted for 18% and commercial loans for 12% of such financing.

Milk processors reported a generally adequate supply of milk of acceptable quality. The greatest volume of milk sales by processors was to supermarkets and food stores, followed by home consumers, restaurants and institutions, in that order.

The fruit and vegetable processors reported a total of 18 items processed, most of which were produced on the island. Truckers were the most important source of supply for produce, followed closely by farmers. Average gross sales volume for the processors was \$1,275,685 in 1964.

About 17% of the processors' sales were for export. The most important market channel in Puerto Rico was wholesalers, accounting for about 63% of processed food sales.

Poultry processors killed an average of 600,000 birds per year, most of which (90%) were supplied by farmers under contract. The large supermarkets were the most important market channel, accounting for 67% of processor sales. Butcher shops bought about 19% of the output and other food stores took the remaining 14%.

Personal Characteristics

The preceding discussion has presented some of the economic characteristics of farmers, truckers and processors. The following discussion will focus on some of the personal characteristics of the three groups of respondents. Some of the more important personal characteristics of these groups are summarized in Table 7.20.

Age

The youngest group of respondents was truckers, of whom about two-thirds were less than 45 years of age. Processors and association member farmers were comparable in age--about one-third of both groups were less than 45 years old. The non-member farmers were the oldest group, with only about one-fourth less than 45 years old.

Education

The processors had generally achieved the highest level of formal education; about three-fourths of these respondents had completed more than 9 grades. Approximately two-thirds of the association member farmers had completed more than 9 grades. Many of these farmers were professional people (doctors, lawyers, etc.) who also farmed, and this accounts for the high degree of formal education. Non-member farmers and truckers indicated the least formal education, with about 40% and 28%, respectively, having completed more than 9 years of schooling.

Mobility

Respondents reported about the same degree of mobility of domicile, with the exception of truckers, who tended to have moved less than the other types of respondents.

Almost 75% of the processors reported having traveled outside of Puerto Rico. About two-thirds of the association member farmers and about half of the non-member farmers and truckers had traveled outside the island.

TABLE 7.20. SUMMARY OF PERSONAL CHARACTERISTICS OF FARMERS (ASSOCIATION AND NON-ASSOCIATION MEMBERS), TRUCKERS, AND PROCESSORS

Characteristic or Achievement	Farmers		Truckers	Processors
	Assoc. Member	Non- Member		
Age: (years)				
24 or less	0%	1%	5%	0%
25 - 34	8	10	25	9
35 - 44	28	15	35	24
45 - 54	39	23	25	34
55 - 64	17	30	10	21
65 or more	8	21	0	3
No answer				9
Highest Grade Reached in School				
None	4%	8%	5%	3%
1 - 3	1	14	12	0
4 - 6	13	22	34	6
7 - 9	20	16	21	9
10 - 12	19	19	26	28
13 - 15	13	10	2	9
16	14	8	0	27
17 or more	16	2	0	9
No answer	0	1	0	9
Years Lived in Same Place				
Less than 1	4%	0%	3%	3%
More than 1/ Less than 5	15	20	4	15
More than 5/ Less than 10	14	11	9	0
More than 10	37	36	12	43
All of life	30	31	72	30
No answer	0	2	0	9
Traveled Outside Puerto Rico				
	69%	52%	47%	73%
Served in Military at Least one Year				
	31%	21%	14%	21%
Religion				
Catholic	74%	84%	89%	79%
Protestant	16	8	7	6
Other or none	10	8	4	15

Characteristics or Achievement	Farmers		Truckers	Processors
	Assoc. Member	Non- Member		
Gross Family Income (before taxes) - 1964				
Less than \$500	8%	8%	4%	3%
\$ 500 - \$ 999	5	6	7	0
\$ 1,000 - \$ 1,999	9	21	28	3
\$ 2,000 - \$ 3,499	17	25	37	3
\$ 3,500 - \$ 4,999	12	15	7	6
\$ 5,000 - \$ 9,999	28	10	4	21
\$10,000 - \$19,999	9	8	2	34
\$20,000 or more	12	5	2	15
No answer		2	10	15
Average Number Dependent on Income	5.8	6.2	6.2	4.9
Use Lottery Regularly	54%	52%	74%	55%

SOURCE:

Association member farmers were more likely to have served in the military for at least one year; truckers were least likely to have served.

Religion

Respondents were predominantly Catholic. The remainder were about evenly divided between Protestant and other or no formal faith.

Family Income

Processors reported the highest level of gross family income (before tax and social security deductions). Approximately 50% of the processors had incomes of \$10,000 or more. Association member farmers reported the next highest income, with about 50% having incomes of \$5,000 or more. Only about 25% of non-member

25% of non-member farmers had incomes of \$5,000 or more. Truckers reported the lowest annual incomes, about 50% of which were less than \$2,000.

The average number of persons dependent on a family income was inversely related to the size of that income. That is, truckers and non-member farmers tended to have larger households than did association member farmers or processors.

About 50% of all farmers and processors and 75% of the truckers reported regular participation in the lottery.

Attitudes of Respondents

The following discussion will present the responses of farmers, truckers, and processors to several questions or statements concerning their attitudes toward social organization or specifically toward the economic environment in which they operate. The investigations of the market participants' attitudes are predicated on the assumption that attitudes are predispositions for action. That is, a person's attitude will influence what he thinks to be possible, what he thinks to be desirable, and, therefore, what actions he will take. Those attitudes which would facilitate actions that are necessary in an increasingly complex society and for higher levels of economic development are considered to be "modern."

"Modern" attitudes include a willingness to trust others and cooperate for mutual benefit, a positive view of government authority and programs, a willingness to innovate and a belief that one can exercise some control over the future, an ability to understand and empathize with social roles not directly part of one's daily life, and a willingness to postpone immediate satisfaction in anticipation of future rewards.

The questions or statements administered in Puerto Rico, along with the responses of farmers, truckers, and processors on an "agree," "disagree," or "indifferent" basis, are summarized in Tables 7.21 and 7.22.

TABLE 7.21. BASIC WORLD VIEW ATTITUDES OF FARMERS, TRUCKERS AND PROCESSORS

Statement	Response (%)			Total
	Agree	Disagree	Don't Know	
Children should be instructed to follow traditional customs to the letter.				
Farmers				
Association Members	22	76	1	100
Non-Members	41	55	4	100
Truckers	49	47	4	100
Processors	30	61	9	100
I'm happy with the changes occurring in Puerto Rico because then new ways are usually better than the old ones.				
Farmers				
Association Members	54	42	4	100
Non-Members	58	37	5	100
Truckers	72	28	0	100
Processors	49	36	15	100
When a problem arises in our community, it's best to depend on leaders to decide what must be done.				
Farmers				
Association Members	60	33	7	100
Non-Members	63	34	3	100
Truckers	67	30	3	100
Processors	49	36	15	100
It would be better for us if the scientist left things alone.				
Farmers				
Association Members	20	76	4	100
Non-Members	21	68	11	100
Truckers	42	47	11	100
Processors	6	79	15	100
In order to succeed in life, the most important thing is luck.				
Farmers				
Association Members	28	67	5	100
Non-Members	54	43	3	100
Truckers	74	21	5	100
Processors	12	76	12	100

Table 7.21, continued

Statement	Response (%)			Total
	Agree	Disagree	Don't Know	
I believe that things of the past are much better, and that changes generally bring problems.				
Farmers				100
Association Members	14	84	2	100
Non-Members	26	70	4	100
Truckers	37	60	3	100
Processors	12	79	9	100
One can really only confide in the members of one's own family				
Farmers				100
Association Members	13	84	3	100
Non-Members	24	72	4	100
Truckers	39	58	3	100
Processors	12	79	9	100
Let's eat, drink and be merry, for tomorrow you may die.				
Farmers				100
Association Members	24	74	2	100
Non-Members	26	69	5	100
Truckers	46	49	5	100
Processors	15	73	12	100
I prefer to work alone, rather than with my family.				
Farmers				100
Association Member	32	61	7	100
Non-Members	29	65	6	100
Truckers	63	33	4	100
Processors	39	49	12	100

TABLE 7.22 ATTITUDES TOWARD MARKET INSTITUTIONS
AND ENVIRONMENT OF FARMERS, TRUCKERS,
AND PROCESSORS

Statement	Response (%)			Total
	Agree	Disagree	Don't Know	
Prices of farm products are determined mostly by the big processors and retailers.				
Farmers				
Association Members	72	26	2	100
Non-Members	68	22	10	100
Truckers	79	17	4	100
Processors	58	30	12	100
The big supermarkets try to use their buying power to maintain low prices for agricultural products.				
Farmers				
Association Members	74	15	11	100
Non-Members	51	18	31	100
Truckers	69	19	12	100
Processors	62	15	23	100
The organization of cooperatives can be beneficial.				
Farmers				
Association Members	94	5	1	100
Non-Members	99	0	1	100
Truckers	81	12	7	100
Processors	76	6	18	100
Farmers should be organized into buying and selling groups to bargain more effectively with the processors and retailers				
Farmers				
Association Members	93	7	0	100
Non-Members	82	9	9	100
Truckers	74	19	7	100
Processors	67	9	24	100

Table 7.22 Continued

Statement	Response (%)			Total
	Agree	Disagree	Don't Know	
I believe, in the future, buyers will increase their use of contracts with farmers and farmers' associations.				
Farmers				
Association Members	88	5	7	100
Non-Members	75	3	22	100
Truckers	67	17	16	100
Processors	79	6	15	100
Farmers should produce and let others take care of marketing.				
Farmers				
Association Members	44	55	1	100
Non-Members	52	44	4	100
Truckers	68	21	11	100
Processors	40	36	24	100
It's not wise for a farmer to try to increase prices and sales by bargaining directly with the retailer.				
Farmers				
Association Members	52	41	7	100
Non-Members	51	38	11	100
Truckers	(- - - - - Not Asked - - - - -)			
Processors	(- - - - - Not Asked - - - - -)			
Nowadays farmers really can't do much to change things				
Farmers				
Association Members	61	34	5	100
Non-Members	64	33	3	100
Truckers	(- - - - - Not Asked - - - - -)			
Processors	(- - - - - Not Asked - - - - -)			
Farmers (or truckers, or processors) can count on help from the government to resolve their marketing and price problems.				
Farmers				
Association Members	74	26	0	100
Non-Members	67	27	6	100
Truckers	70	21	9	100
Processors	76	9	15	100

(continued)

Table 7.22 Continued

Statement	Response (%)			Total
	Agree	Disagree	Don't Know	
The figures reported by the Department of Agriculture on agricultural production, volume of sales, and prices are reasonable and not prejudiced.				
Farmers				
Association Members	88	5	7	100
Non-Members	74	9	17	100
Truckers	74	14	12	100
Processors	67	15	18	100
Government programs are usually beneficial only for a select group of dealers who are influential in politics.				
Farmers				
Association Members	22	73	5	100
Non-Members	26	66	8	100
Truckers	54	37	9	100
Processors	21	68	11	100
Grading and regulation of eggs has proved to be wise regulation				
Farmers				
Association Members	91	1	8	100
Non-Members	85	5	10	100
Truckers	79	2	19	100
Processors	79	3	18	100
Milk regulations have benefited business and consumers.				
Farmers				
Association Members	89	6	5	100
Non-Members	86	5	9	100
Truckers	70	16	14	100
Processors	79	3	18	100
Grading and packaging of farm produce are a waste of time for the farmer.				
Farmers				
Association Members	32	66	2	100
Non-Members	33	64	3	100
Truckers	(-----Not Asked-----)			
Processors	(-----Not Asked-----)			

Basic World View Attitudes

The survey included a series of nine statements dealing with basic world views. Agreement with two of the nine statements ("I am happy with the changes occurring in Puerto Rico because the new ways are usually better than the old ones" and "I prefer to work alone, rather than with my family") is interpreted as a "modern" response; disagreement with all of the other seven statements is considered to indicate a "modern" attitude.

The responses to the basic world view statements indicate that processors hold the most modern views, followed closely by association member farmers. Non-member farmers hold slightly less modern views than the two forementioned groups, and truckers hold the least modern basic world views of the four types of respondents.

It should be noted that the statement reading: "When a problem arises in our community, it is best to depend on leaders to decide what must be done," has been used in other studies as an indication of a "traditional" view when it is agreed with by respondents. This interpretation may be open to considerable question in Puerto Rico, however, since the island has had a stable and progressive governmental administration for several years. The people have, therefore, learned to trust many of their officials and have a comfortable reliance on them.

Attitudes toward Market Institutions and Environment

The survey included six statements concerning the power and relative bargaining positions of the marketing participants. All respondents generally agreed that prices of farm products are determined mostly by big processors and retailers, and further agreed, to a slightly lesser extent, that large supermarkets try to use their power to maintain low prices for agricultural products. Association member farmers and truckers tended to agree with these statements to a slightly greater degree than non-member farmers and processors.

The organization of cooperative was seen as beneficial by a majority of all respondents. One reason for such a universally positive response to cooperatives may be the substantial effort over the past two decades to promote cooperatives and widespread cooperative education by the various co-op agencies, including the Puerto Rican Department of Cooperatives.

Furthermore, a majority of all types of respondents agreed that farmers should be organized for a more effective bargaining position with processors and retailers and that in the future buyers will increase their use of contracts with farmers and farmers' organizations. As would be expected, more farmers agreed with these statements than truckers or processors, but only slightly more. Therefore, it might be concluded that there is a general dissatisfaction with present market coordination among these participants and a willingness to accept some innovations in marketing arrangements.

There was mixed response to the statement that farmers should produce and let others take care of the marketing. Truckers were the only group in which a majority agreed with this statement, which might be explained by their more "traditional" basic world view and by their unique position in the present marketing arrangements.

Two statements dealing with the farmer's bargaining position were submitted only to farmers. Both association members and non-members showed a slight tendency to agree that "it is not wise for a farmer to try to increase prices and sales by bargaining directly with the retailer." Both groups rejected by a substantial margin the statement that "nowadays farmers can't do much to change things." It might be concluded that farmers believe that they can improve their position and see the need for group action to precipitate change.

There were three statements related to government actions and services. In general, all types of respondents felt that they could count on help from the government to resolve their

marketing and price problems, and they also felt that the agricultural production and market reports were accurate. On the other hand, a majority of all respondents except truckers disagreed that government programs usually benefit only select groups with political influence. Thus, truckers seem to feel they don't get a fair share of benefits from government programs.

Two statements were submitted to the respondents regarding government regulation, the first dealing with egg regulation and the second with milk regulation. There was substantial endorsement of both regulations by all groups of respondents.

One statement, "Grading and packaging of farm produce are a waste of time for the farmer," was submitted only to farmer respondents. A majority of both association members and non-members disagreed with this statement.

Interpersonal Trust

The degree to which a person is willing to enter into an agreement where the outcome is dependent on another person or other persons is considered to be positively related to the success of institutional development within a society.

An indication of interpersonal trust was attempted by determining the degree to which respondents would cooperate with another person who was in need of significant financial aid. The respondents were asked what action they would take if a close relative asked them to co-sign a personal loan note equal to a month's wages. The same question was repeated in terms of the request of a close friend (Table 7.23). In both cases, a majority of both farmer groups and processors would give their signature. Only about 50% of the truckers would give their signature to a relative, and only about 35% would give it for a close friend. It could be concluded that farmers and processors have a high degree of interpersonal trust, while truckers have a fairly low degree of interpersonal trust. While this conclusion might be used for a generalization, the meaning

TABLE 7.23. RESPONSES OF RESPONDENTS TO QUESTIONS REGARDING INTERPERSONAL TRUST

	<u>Give Gladly</u>	<u>Feel Obligated</u>	<u>Would Not</u>	<u>Total</u>
If a <u>close relative</u> asked you to co-sign a personal loan that would amount to a month's wages, what would you do?				
Farmers				
Association Members	87	5	8	100
Non-Members	80	7	13	100
Truckers	47	4	49	100
Processors	3	80	17	100
If a <u>friend</u> asked you to co-sign a personal loan that would amount to a month's wages, what would you do?				
Farmers				
Association Members	64	20	16	100
Non-Members	70	9	21	100
Truckers	28	9	21	100
Processors	13	64	23	100

is not clear, since the trucker's financial position is generally more precarious than that of other groups of respondents.

Propensity to Undertake Risk

The concept of risk-taking is closely associated with modernization. It is believed that a highly motivated and innovative person will, when given the best available information, be willing to accept higher levels of risk of loss for greater potential gain than will a less motivated and less innovative person.

In order to assess the level of risk the various respondents would undertake given an alternative, the farmers, truckers, and processors were asked to consider the following hypothetical situation.

Assume that you had saved \$10,000 from your income, which of the following investments would you choose?

- a. An investment sure of returning 6% annually.
- b. An investment in which a gain of \$3,000 was just as likely as a loss of \$1,000.
- c. Don't know or don't understand.

As can be seen in Table 7.24, which summarized the responses of different survey groups, processors indicated the greatest tendency to accept the more risky, but potentially more profitable "b" alternative, followed by association member farmers, truckers, and non-member farmers, in that order. This response is consistent with the respondents' respective attitudes discussed earlier.

TABLE 7.24. INVESTMENT PREFERENCES AT DIFFERENT LEVELS OF RISK, by RESPONDENT TYPE

Alternatives	Farmers		Truckers	Processors
	Assoc. Member	Non-Member		
a. An investment sure of returning 6% annually	64%	55%	58%	52%
b. An investment in which a gain of \$3,000 was just as likely as a loss of \$1,000	32%	27%	29%	39%
c. Do not understand question	4%	18%	12%	9%
	100%	100%	100%	100%

CONCLUSIONS

From the responses compiled and presented in this paper, some general observations may be offered concerning the primary assembly and marketing of selected commodities in Puerto Rico.

1. There is evidence of a high degree of market coordination between milk producers and milk processors. First, the milk producers generally had large operations, based on gross dollar sales. Since these farmers invested relatively large amounts of capital into milk production units, we may assume that relatively stable marketing conditions were present. The stability of a market is indicative of the level of market coordination. Second, the milk producers sold almost all of their production to one type of buyer - milk processors, and this indicates coordination in the milk market. Finally, all milk producers reported having a contract or sales agreement for their production. Conversely, milk processors reported a generally sufficient volume of acceptable quality milk for their plant operations.
2. There is also evidence of a high degree of vertical coordination in the egg marketing channels of Puerto Rico. As in the case of milk producers, egg producers had relatively large operations and marketed the majority of their eggs through one type of market channel -- cooperatives or producer associations. Indeed, a majority of egg producers reported having contracts or sales agreements for their egg production. All of these factors point toward market coordination development. Noting that association member farmers who produced eggs generally

had operations which were about twice as large as non-member farmers had, and noting that the cooperatives and producer associations were the market outlet for almost all association members, we might conclude that the associations must serve very important coordinating functions in the assembly and marketing of eggs.

3. The trucker seems to serve a more important coordinating function in the marketing of fruits and vegetables than in milk and eggs. This observation is based on the percentage of fruit and vegetable producers who use truckers as their primary market outlet for their commodities. However, one would question "how well" the fruit and vegetable truckers perform their coordination function since the survey revealed the existence of a large number of small trucker respondents, most of whom engaged in this activity only part time. Moreover, the truckers' principal buyers were small stands in the market plazas, and their least important markets were food stores and large supermarkets. This market procedure is a rather traditional practice which is probably perpetuated in large part by the absence of any wide-spread grading, cleaning, and packaging of the fruits and vegetables.
4. Basic world view of the respondents indicates that processors hold the most modern outlook, with association member farmers, non-member farmers, and truckers following in that order. One might assume that these participants who hold the most modern world view would also be the most receptive participants to new programs or services which might be introduced by governmental or private agencies. In this case, for example, if a program of better grading and packaging of some commodity group was deemed necessary to improve market coordination,

the agency responsible for its implementation might find initial acceptance easier among processors and association member farmers and truckers. The implementation program could be planned accordingly.

5. There seems to be a generally positive attitude among all respondents toward cooperatives, group action, and forward contracting as effective market coordinating institutions. Further, a majority of all types of respondents believed that they could count on help from the government to resolve their marketing and price problems. This should precipitate some thought by those public officials charged with development responsibility, as to the best way to harness this "good will" to establish better market coordination. Widespread approval existed among all types of respondents with regard to the existing milk and egg regulations. It would seem that some regulatory action in the fruit and vegetable market could be effectively introduced, given such widespread acceptance of existing regulations.
6. The most striking observable difference between association member farmers and non-member farmers was that association members generally had larger operations for all commodity groups studied, based on median gross sales. Although the cause and effect relationship between volume of sales and association membership is not known, a plausible argument might be made that those producers who have the largest investment in their production enterprises, and are therefore assuming greater risk of market disturbances, are seeking actions and institutions which facilitate market coordination and reduce risk.

7. Differences between association member farmers and non-member farmers are not readily apparent with regard to personal characteristics or attitudes. It would seem that association members are younger, have a better formal education, and have travelled more widely than non-members. The association members attitudes tend to be slightly more modern than non-members. However, these notions are made from observation of the aggregate raw data without the aid of statistical test.