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Potential for Supermarket Outlets for Tilapia in Honduras

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Abstract

Honduran tilapia farmers currently face several problems regarding product size and export-quota requirements. One major obstacle is the production of undersized fish not suitable for the export market. Domestic markets would provide stability by offering additional market alternatives, thereby reducing risks associated with having only one target market. The goal of this project was to assess the domestic market as an alternative tilapia outlet. While the overall study includes analyses of supermarket, fish market, and restaurant market outlets, this document will focus on the supermarket segment. A census of the supermarkets listed in telephone books in the major urban areas and eight small towns in Honduras resulted in 54 completed supermarket questionnaires. The analysis provides important insights into supply characteristics, buyer patterns and preferences, and trends in the domestic market. The survey showed that tilapia is a well-known product in Honduran supermarkets. More than 40% of the supermarkets in the country sold tilapia, and 50% of supermarket managers responded that they were either somewhat or very likely to sell tilapia the next year. However, lack of demand, freshness, and seasonal availability were mentioned as primary reasons for not selling the product. Short-term strategies would focus on larger supermarkets catering to international, high-, and middle-income clientele groups. The presence of a specialized seafood section contributes to tilapia sales. Low daily volumes and lack of demand could be addressed through in-store demonstrations, samples, and point-of-purchase information. These results suggest that, provided tilapia farmers combine adequate marketing strategies with availability of high-quality tilapia, it may be possible to further develop the domestic market for tilapia in Honduras.

Introduction

Tilapia culture began in Honduras in the late 1970s (Teichert-Coddington and Green, 1997). In the early years, tilapia production was characterized by small-scale, family operations with the objective of providing supplemental protein to the family. Thus, tilapia ponds were managed either extensively or semi-extensively as a supplemental agricultural activity. However, in the last decade, tilapia production in Honduras has grown rapidly because of expansion of the market for fresh tilapia fillets in the United States and fiscal reforms that made Honduras more attractive to foreign investors (Humphrey, 1997). Additionally, uncertain prices and disease problems that struck shrimp farmers in the 1990s encouraged many to raise tilapia (Engle, 1997b).

Export-oriented production of tilapia targeting the US market began in 1990 and developed rapidly (Teichert-Coddington and Green, 1997). In 1997, fifteen tilapia farms with a total water surface area of 185 ha produced tilapia on a commercial scale for export and for domestic markets. These farms produced tilapia exclusively and were owned by individuals, local investors, and international investors (Green and Engle, 2000). Tilapia exports from Honduras increased 56% (792 Mt) in 1999 compared with 1998 levels (Green and Engle, 2000). Nevertheless, exporting tilapia fillets to the US is a risky practice due to the lack of adequate infrastructure needed to export the product and the small number of brokers handling tilapia. Most successful export companies in Central America have developed their own marketing companies in the US.

Honduran tilapia farmers currently face several problems regarding product size and export-quota requirements. One major obstacle is the significant production of undersized fish not acceptable for the export market. Domestic markets would provide stability by offering additional market alternatives, hence reducing risks associated with one target market. Volume requirements would likely be lower, and it might be possible to sell smaller sizes of fish, thereby taking advantage of selling to different market segments. Development of a domestic market would also provide broader economic benefits such as new sources of employment and additional sources of high-quality protein for Hondurans.

Limited work has been done on markets for finfish in Central America. The few studies that have been carried out focused on the catch from commercial fisheries in Costa Rica (Scheid and Sutinen, 1979) and in Panama (Matton, 1981). Head et al. (1994) developed market guidelines for saltwater-cultured Florida red tilapia in Puerto Rico. Several studies conducted in the US have examined the potential to develop markets for tilapia (Crawford et al., 1978; Galbreath and Barnes, 1981; Nelson et al., 1983). More recently, Swanson (1995) described US market requirements for tilapia. Engle (1997a) interviewed intermediate seafood buyers in the US to determine the potential to increase sales of fresh and frozen tilapia fillets in the country. However, no systematic market information is available to provide guidance to identify potential market channels, most promising markets, and efficient marketing strategies in Central America.

Description of Surveys

A comprehensive study was designed to characterize existing supermarket channels for tilapia in Honduras and to seek strategies to further develop supermarket outlets in the country for farm-raised tilapia. The survey instrument was designed to obtain descriptive information. Questions were included on tilapia and other types of fish and seafood sold, prices of fish products sold, market channels, and information on seafood suppliers. Awareness and availability of tilapia were addressed through questions related to the owners' familiarity with tilapia as well as questions related to the supply of tilapia. Information on vendor attitudes towards attributes such as flavor, odor, supply, quality, ease of preparation, size, and price were elicited by asking respondents to assign a value from 1 to 10 in response to statements concerning each attribute. A score of 1 represented complete disagreement with the statement, and a score of 10 represented complete agreement.

Figure 1. Principal urban centers and small towns in Honduras. Supermarket survey, Honduras, 1999.

Direct personal interviews were conducted in Honduras from 20 October to 14 November 1999, based on a census of the supermarkets published in the telephone listings. The survey resulted in 54 completed questionnaires. Supermarkets represented in the survey excluded convenience (Start Mart) stores. The survey was conducted in Tegucigalpa and San Pedro Sula, the two main urban population centers in the country, and in eight small rural towns. The following small rural towns were selected along the primary route from north to south of the country following the principal highways along which most of the population is located: Catacamas, Juticalpa, Santa María del Real, and Campamento in the Olancho Department; Siguatepeque, Comayagua, Lago de Yojoa in the Comayagua Department; Puerto Cortéz in the Cortéz Department; and Santa Barbara and Choluteca in the departments of the same name (Figure 1).

Socioeconomic characteristics related to the supermarkets in the study were necessary to provide a basis for interpretation of responses. Questions were asked about the size of stores, the type of ownership, location, and years in business.

The response rate was very high. This is likely due to the novelty of market surveys in Honduras. People were surprised to be asked to participate but were extremely cooperative. The response rate of the survey was 100%.

The survey included 56 potential questions asked of managers or seafood section employees of the supermarkets. The duration of the interview was approximately 15 minutes.

The data collected were analyzed in Survey Pro® software. Cross-tabulations were developed to compare responses by region (Central-South and North). Additional cross-tabulations were developed to compare responses by supermarkets that sold, never sold, or used to sell tilapia; reasons why supermarkets never sold tilapia; likelihood to begin selling tilapia; years the store has been selling tilapia; current sales of tilapia in the survey year compared to one year and two years ago; type and origin of tilapia suppliers; and attitudes toward different attributes of tilapia.

Characteristics of Honduran Supermarkets

Of the 54 completed supermarket questionnaires, 70% were located in the Central-South region and 30% in the North. This reflects the greater population levels in the Central-South part of the country and the correspondingly greater number of supermarkets in areas with higher population densities. A high percentage of the supermarkets in both regions sold some type of seafood product.

Almost 40% of the supermarket participants were located in Tegucigalpa and another 24% in San Pedro Sula, which are the principal urban centers in Honduras (Table 1). The remaining 39% were located in small rural towns in several different departments. The Central-South region of Honduras included the city of Tegucigalpa and towns of Comayaguela, Olancho, Choluteca, Santa Barbara, and Siguatepeque, while the North region included San Pedro Sula and Puerto Cortéz.

Most supermarkets (62%) in Tegucigalpa reported a weekly sales volume over US$36,000. (Original amounts were converted from Honduran lempiras to US dollars at the prevailing rate of Lps. 15 = 1$US.) However, 38% of the supermarkets located in Tegucigalpa, 46% of those in San Pedro Sula, and 65% of establishments in small towns reported a weekly sales volume less than $36,000. Only one supermarket, located in San Pedro Sula, reported a weekly sales volume of more than

Table 1. Location of supermarkets interviewed in Honduras. Supermarket survey, Honduras, 1999.

Location	**Region of Country**					
	Central-South		*North*		*Total*	
	N	%	N	%	N	%
Tegucigalpa	21	55	0	0	21	39
San Pedro Sula	0	0	13	81	13	24
Comayaguela	7	18	0	0	7	13
Olancho	3	8	0	0	3	6
Puerto Cortéz	0	0	3	19	3	6
Choluteca	2	5	0	0	2	4
Santa Barbara	2	5	0	0	2	4
Siguatepeque	2	5	0	0	2	4
Other	1	3	0	0	1	2

Table 2. Store area of supermarkets interviewed in Honduras. Supermarket survey, Honduras, 1999.

Store Area (m^2)	**Region of Country**					
	Central-South		*North*		*Total*	
	N	%	N	%	N	%
0–500	10	26	5	31	15	28
501–1,000	9	24	2	13	11	20
1,001–2,000	12	32	6	38	18	33
2,001–3,000	4	11	1	6	5	9
3,001–4,000	2	5	2	12	4	7
No Answer	1	3	0	0	1	2
Total	38	100	16	100	54	100

Table 3. Frequent clientele groups of supermarkets, by region. Supermarket survey, Honduras, 1999.
[a] Multiple responses result in percentages that total more than 100%.

Clientele Group	**Region of Country**					
	Central-South		*North*		*Total* [a]	
	N	%	N	%	N	%
High-Income Mestizo	14	37	10	63	24	44
International	11	29	2	13	13	24
Middle-Income Mestizo	31	82	13	81	44	82
Low-Income Mestizo	19	50	3	19	22	41
Middle-Income Black	1	3	3	19	4	7
Low-Income Black	2	5	1	6	3	6

Table 4. Origin of investors in supermarket businesses in Honduras, by region. Supermarket survey, Honduras, 1999.

Origin of Investors	Region of Country					
	Central-South		*North*		*Total*	
	N	%	N	%	N	%
Honduran Investors	24	63	13	81	37	69
Other Central-American Investors	9	24	2	13	11	20
Asian Investors	2	5	1	6	3	6
European Investors	2	5	0	0	2	4
No Answer	1	3	0	0	1	2
Total	38	100	16	100	54	100

$180,000. Those supermarkets that purchased fish from fish farmers tended to be larger, with weekly sales volumes between $36,000 and $67,500.

The most common store size (33% of respondents) was an area of 1,001 to 2,000 m^2 (38% in the North region and 32% in the Central-South) (Table 2). Another 28% of the stores had an area of 0 to 500 m^2 and 20% had an area of 501 to 1,000 m^2. The remaining stores were larger.

Middle-income mestizos were the most frequently mentioned (82%) clientele group in both the Central-South and North regions (Table 3). High-income mestizo and low-income mestizo followed this overall. In the Central-South region, the second most common (50% of respondents) type of clientele group was low-income mestizo, but in the North (63% of respondents) it was high-income mestizos. Most stores that mentioned international clients were located in the Central-South region.

Almost 70% of the supermarket businesses nationwide are the property of Honduran investors, followed by investors from other Central American countries (Table 4). This was true for both regions. A few supermarkets were owned by Asian and European investors. Half of the supermarkets in the Central-South region that were property of Honduran investors reported weekly sales volumes of less than $36,000, compared to 33% in the North. All supermarkets in the North that were property of investors of other Central American countries reported weekly sales volumes of $36,000 to 67,000, compared to only 33% in the Central-South. All supermarkets owned by Asian investors reported weekly sales volumes of less than $36,000.

Half of the supermarket respondents had been in business less than five years. There were apparent differences between regions, as 55% of the Central-South supermarkets had been in business less than five years compared to 38% in the North. An additional 12% had been in business for more than 20 years. The recent economic expansion in Honduras, economic globalization, and destruction by Hurricane Mitch may have resulted in this evident growth in the supermarket sector.

More than half (59%) of the supermarket respondents had a specialized fish market section, compared with only 41% who indicated that they did not

Table 5. Availability of specialized fish section in the supermarkets interviewed, by region. Supermarket survey, Honduras, 1999.

Specialized Fish Section	Region of Country					
	Central-South		*North*		*Total*	
	N	%	N	%	N	%
Available	18	47	14	88	32	59
Not Available	20	53	2	12	22	41
Total	38	100	16	100	54	100

Table 6. Likelihood of supermarket adding a specialized fish section. Supermarket survey, Honduras, 1999.

Likelihood	Region of Country					
	Central-South		*North*		*Total*	
	N	%	N	%	N	%
Very Likely	6	30	0	0	6	27
Somewhat Likely	4	20	1	50	5	23
Very Unlikely	5	25	0	0	5	23
Somewhat Unlikely	3	15	0	0	3	14
No Answer	2	10	1	50	3	14
Total	20	100	2	100	22	100

Table 7. Fish and seafood suppliers, by region. Supermarket survey, Honduras, 1999.
[a] Multiple answers to this question resulted in percentage totals over 100%.

Type of Supplier	Region of Country					
	Central-South		*North*		*Total*	
	N	%	N	%	N	%
Wholesalers	20	53	9	56	29	54
Fishermen	1	3	6	38	7	13
Processor/Producers	1	3	0	0	1	2
No Answer	17	45	1	6	18	33
Total	39	104 [a]	16	100	55	102 [a]

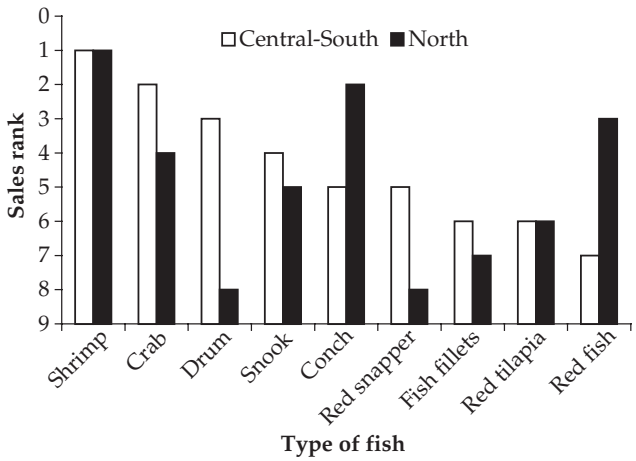

Figure 2. Ranking of top fish and seafood products in terms of sales by region. Supermarket survey, Honduras, 1999. (1 is the top ranking.)

have one (Table 5). A high percentage (88%) of the stores in the North reported having a specialized fish section. Of those without a specialized fish section, 50% of respondents indicated that they were very likely or somewhat likely to add such a fish section (Table 6). One of the two supermarkets in the North that did not have a fish section indicated that they were somewhat likely to add one. In the Central-South region, 30% of supermarkets interviewed indicated that they were very likely to add a specialized fish section. Another 20% reported that they were somewhat likely, and 25% reported that they were very unlikely to do so.

Fifty-four percent of the supermarkets interviewed purchased fish and seafood from wholesalers, and 13% purchased fish and seafood products from fishermen (Table 7). The North region had a

Table 8. Top fish and seafood products in terms of sales, by region. Supermarket survey, Honduras, 1999.
[a] Multiple responses result in percentages that total more than 100%.
[b] Itajara, lobster, squid, white fish, black tilapia, grouper, other crab, and pink carp.

Species/Products	Region of Country					
	Central-South		*North*		*Total*	
	N	%	N	%	N	% [a]
Shrimp	15	40	13	81	28	52
Conch	8	21	11	69	19	35
Crab	12	32	6	38	18	33
Snook	9	24	5	31	14	26
Red Fish	4	11	7	44	11	20
Drum	10	26	1	6	11	20
Red Tilapia	5	13	4	25	9	17
Red Snapper	8	21	1	6	9	17
Fish Fillets	5	13	3	19	8	15
Tilapia Fillets	3	8	4	25	7	13
White Fillets	5	13	0	0	5	9
Red Fillets	5	13	0	0	5	9
King Crab	0	0	5	31	5	9
Other [b]	8	21	7	44	15	28
No Answer	17	45	1	6	18	33

Table 9. Seafood items with fastest sales growth. Supermarket survey, Honduras, 1999.
[a] Multiple responses result in percentages that total more than 100%.
[b] Red fillets, brined fish, white fillets, white fish, itajara, pink carp, black tilapia, squid, Atlantic bumper, lobster, king crab, and other crab.

Species/Products	Region of Country					
	Central-South		*North*		*Total*	
	N	%	N	%	N	% [a]
Shrimp	11	29	10	63	21	39
Conch	6	16	9	56	15	28
Red Snapper	8	21	1	6	9	17
Red Fish	4	11	4	25	8	15
Snook	6	16	2	13	8	15
Tilapia Fillets	4	11	4	25	8	15
Fish Fillets	3	8	2	13	5	9
Drum	4	11	1	6	5	9
Red Tilapia	2	5	2	13	4	7
Other [b]	5	13	6	38	11	20
No Answer	17	45	2	13	19	35

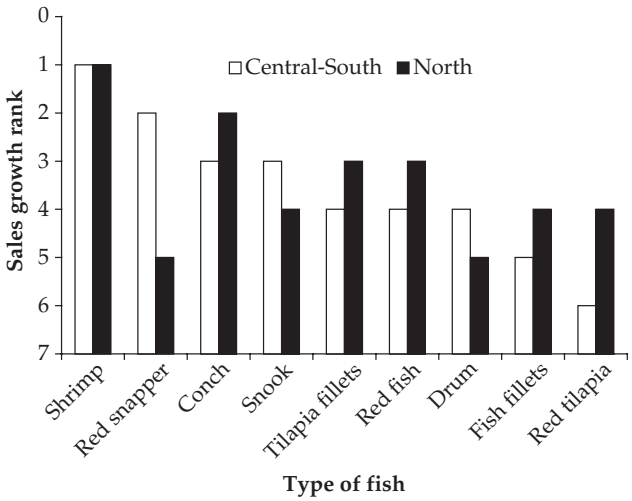

Figure 3. Ranking of seafood items with fastest sales growth by region. Supermarket survey, Honduras, 1999. (1 is the top ranking.)

Table 10. Number and percentage of supermarkets that were part of a chain or independent. Supermarket survey, Honduras, 1999.

Category	Region of Country					
	Central-South		*North*		*Total*	
	N	%	N	%	N	%
Part of a Chain	24	63	8	50	32	59
Independent	14	37	8	50	22	41
Total	38	100	16	100	54	100

higher number of respondents (38%) that purchased fish and seafood from fishermen as compared to respondents in the Central-South region.

The top fish and seafood species in terms of sales in supermarkets was shrimp, mentioned by 52% of respondents (Table 8). This was followed by conch (35%), crab (33%), snook (26%), red fish (20%), drum (20%), red tilapia (17%), red snapper (17%), fish fillets (15%), tilapia fillets (13%), white fillets (9%), red fillets (9%), and king crab (9%). There were some regional differences in the rankings. Both regions ranked shrimp as the top product. However, more respondents in the North rated conch, red fish, tilapia fillets, and red tilapia as top products than did respondents in the Central-South region. However, in the Central-South region, crab, drum, and red snapper were more frequently mentioned as top products (Figure 2).

Table 11. Number of stores that compose the supermarket chain, by region. Supermarket survey, Honduras, 1999.

Number of Stores	Region of Country					
	Central-South		*North*		*Total*	
	N	%	N	%	N	%
2–4	8	33	5	63	13	40
5–8	12	50	2	25	14	44
11–15	4	17	1	12	5	16
Total	24	100	8	100	32	100

Table 12. Number and percentage of supermarkets that sold, never sold, and used to sell tilapia, by region. Supermarket survey, Honduras, 1999.

Category	Region of Country					
	Central-South		*North*		*Total*	
	N	%	N	%	N	%
Sold Tilapia	12	32	10	63	22	41
Never Sold Tilapia	15	39	4	25	19	35
Used to Sell Tilapia	11	29	2	12	13	24
Total	38	70	16	30	54	100

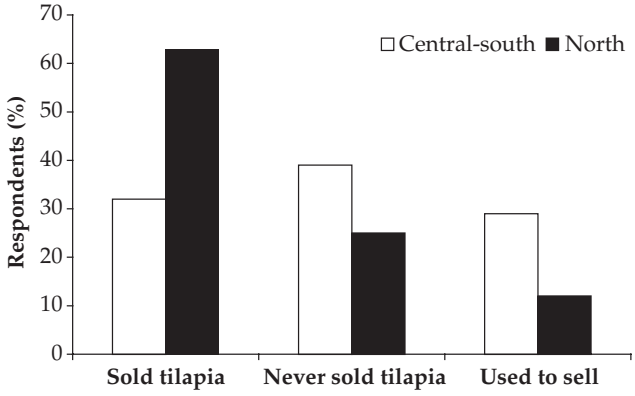

Figure 4. Percentage of supermarkets that sold, never sold, and used to sell tilapia by region. Supermarket survey, Honduras, 1999.

The seafood items with the fastest sales growth in the survey year were shrimp (39%), conch (28%), red snapper (17%), red fish (15%), snook (15%), and tilapia fillets (15%) (Table 9). There were some regional differences in the rankings because more supermarkets in the North region rated conch, red

Table 13. Supermarkets that sold, never sold, and used to sell tilapia by chains and independent store, by region. Supermarket survey, Honduras, 1999.

Category	Region of Country									
	Central-South				*North*				*Total*	
	Chain		Independent		Chain		Independent			
	N	%	N	%	N	%	N	%	N	%
Sold Tilapia	7	29	5	36	6	75	4	50	22	41
Never Sold Tilapia	8	33	7	50	1	12	3	38	19	35
Used to Sell Tilapia	9	38	2	14	1	13	1	12	13	24
Total	24	100	14	100	8	100	8	100	54	100

fish, tilapia fillets, fish fillets, and red tilapia as faster-growing products compared to those in the Central-South region (Figure 3). Nonetheless, more supermarkets in the latter region rated red snapper, snook, and drum as products with faster-growing sales.

Almost 60% of the supermarket respondents were part of a chain of supermarkets, and the other 41% were independent businesses (Table 10). The majority (63%) of supermarkets in the Central-South region were part of a chain, compared with only 50% in the North. In supermarket chains the decision to add new products is ordinarily made in the general office.

The greatest percentage of the supermarket chains interviewed had from two to eight stores located in difference places in the country (Table 11). A higher percentage of supermarket chains in the North region tended to have fewer stores (63% of the respondents in the North had two to four stores). In contrast, half of the chains in the Central-South region had five to eight stores.

Tilapia Sales

Overall, 41% of the supermarkets sold tilapia, 24% used to sell tilapia, and 35% had never sold tilapia (Table 12). A much higher percentage of respondents in the North region sold tilapia (63%) as compared to only 32% of respondents in the Central-South region (Figure 4). The Central-South region had a higher percentage (29%) of stores that used to sell tilapia as compared to only 12% in the North. Two supermarkets in the North indicated that they had never heard of tilapia.

Seventy-five percent of the chain supermarkets in the North region sold tilapia, compared with only 29% in the Central-South region (Table 13). In contrast, 38% of the supermarket chains in the Central-South region used to sell tilapia, compared to only 13% in the North. Moreover, 33% of the supermarket chains in the Central-South never sold tilapia, compared to only 12% in the North. Larger stores tended to be those that sold tilapia.

In the North region most of the supermarkets with weekly sales volumes from $36,000 to $67,500 sold tilapia; by contrast, only 40% of this store size range sold tilapia in the Central-South. In the Central-South region, 58% of the supermarkets that never sold tilapia had a weekly sales volume less that $36,000 compared with 26% of the supermarkets that sold tilapia and 16% of the supermarkets that used to sell tilapia.

Larger stores with specialized fish sections tended to sell tilapia. Forty-four percent of supermarkets that sold tilapia and reported a specialized fish section had a weekly sales volume from $36,000 to $67,500.

Of the stores that sold tilapia, the highest percentages were those with international clientele (Table 14). This was followed by high-income mestizos, then middle-income mestizo clients. Of the stores that never sold tilapia, the highest percentages were those with low-income mestizo and black clients. In the North region the majority (80%) of the supermarkets that mentioned high-income mestizos as the most frequent clientele group sold tilapia, compared to only 43% in the Central-South.

More of the supermarkets (34%) that had either stopped selling or had never sold tilapia mentioned lack of demand as the principal reason (Table 15). This was followed by storage problems (22%), seasonal availability problems (16%), freshness, lack

Table 14. Frequent clientele groups of supermarkets that sold, never sold, and used to sell tilapia, by region. Supermarket survey, Honduras, 1999.
[a] Multiple responses result in percentages that total more than 100%.

Clientele Group	Region of Country																	
	Central-South								*North*								*Total* [a]	
	Sold Tilapia		Never Sold Tilapia		Used to Sell Tilapia		Total		Sold Tilapia		Never Sold Tilapia		Used to Sell Tilapia		Total			
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
High-Income Mestizo	6	43	3	21	5	36	14	37	8	80	2	20	0	0	10	63	24	44
International	7	64	0	0	4	34	11	29	2	100	0	0	0	0	2	13	13	24
Middle-Income Mestizo	9	29	13	42	9	29	31	82	8	62	3	23	2	15	13	81	44	82
Low-Income Mestizo	4	21	11	58	4	21	19	50	1	33	2	67	0	0	3	19	22	41
Middle-Income Black	0	0	1	100	0	0	1	3	1	100	0	0	2	50	3	19	4	7
Low-Income Black	0	0	2	100	0	0	2	5	0	0	1	100	0	0	1	6	3	6

Table 15. Number and percent of respondents who either never sold or used to sell tilapia, by reason for not selling and by region. Supermarket survey, Honduras, 1999.

Reason for Not Selling Tilapia	Region of Country									
	Central-South				*North*				*Total*	
	Never Sold		Used to Sell		Never Sold		Used to Sell			
	N	%	N	%	N	%	N	%	N	%
Lack of Demand	4	27	3	27	2	50	2	100	11	34
Storage Problems	6	40	0	0	0	0	1	50	7	22
Unavailable at Certain Times of the Year	2	13	2	18	0	0	1	50	5	16
Freshness	0	0	3	27	0	0	0	0	3	9
Not Enough Space	3	20	0	0	0	0	0	0	3	9
Have Not Heard of It	0	0	0	0	2	50	0	0	3	9
No Supply	0	0	1	9	1	25	0	0	2	6
Negative Attitudes by Consumers	0	0	1	9	0	0	0	0	2	6
Earthy Flavor	0	0	1	9	0	0	0	0	1	3
Fish Is Too Small	0	0	0	0	0	0	1	50	1	3
Do Not Know/No Answer	1	7	1	9	1	25	0	0	3	9
Other	2	13	1	9	0	0	0	0	3	9

Table 16. Years supermarket has been selling tilapia. Supermarket survey, Honduras, 1999.

Years Selling Tilapia	Region of Country					
	Central-South		*North*		*Total*	
	N	%	N	%	N	%
> 7	2	14	1	10	3	14
3–6	1	18	3	30	4	18
1–3	9	68	6	60	15	68
Total	12	100	10	100	22	100

of space, and had not heard of it (9%) as reasons for not selling tilapia. There were some regional differences in the responses to this question. In the North, two stores indicated that they had not heard of tilapia, while another store in the North indicated that they had stopped selling tilapia because the fish were too small. However, in the Central-South region, storage problems were cited most frequently as the reason for never having sold tilapia. Supermarkets in the Central-South region that stopped selling tilapia indicated that lack of demand, problems with

Table 17. Current sales volumes of tilapia compared to one year and two years ago, by region. Supermarket survey, Honduras, 1999.

Change in Sales	Compared to One Year Ago				Compared to Two Years Ago			
	Central-South		*North*		*Central-South*		*North*	
	N	%	N	%	N	%	N	%
More Tilapia	4	33	5	50	4	33	5	50
Less Tilapia	5	42	4	40	1	8	3	30
Same Tilapia	3	25	0	0	3	25	0	0
No Answer	0	0	1	10	4	34	2	20
Total	12	100	10	100	12	100	10	100

freshness, and lack of availability at certain times of the year were the main reasons.

Ninety-five percent of the respondents indicated that they did not have problems with the quality of tilapia. Only 5% said that they experienced problems with the quality of tilapia that they purchased. Of those that mentioned quality problems, freshness and off-flavor were the problems most frequently cited.

The majority (68%) of supermarket respondents had been selling tilapia for only the last three years (1997 to 1999) (Table 16). Another 18% of supermarket managers responded that they began selling tilapia in the last six years (1993 to 1996), while only 14% began selling tilapia prior to 1992 (more than seven years). This likely reflects the young age of supermarkets in general in the country. Moreover, all supermarkets in the North that had been in business less than five years reported selling tilapia compared to only 33% in the Central-South.

Forty-one percent of the respondents indicated that they were selling more tilapia in the current year compared to one and two years ago. More respondents in the North (50%) indicated that they were selling more tilapia in 1999 as compared to 1998 and 1997 than in the Central-South (33% of respondents) (Table 17). Overall, only 18% indicated that they were selling less tilapia compared to two years ago. There was a marked regional difference in the answer to this question because 30% of supermarket respondents in the North indicated that they were selling less tilapia in the survey year than 1997 as compared to only 8% of supermarkets in the Central-South. Moreover, 42% of those interviewed in the Central-South responded that they sold less tilapia in 1999 as compared to 1998, with a similar percentage of respondents in the North reporting the same.

Almost 60% of supermarket participants located in San Pedro Sula indicated that they were selling more tilapia in the survey year (1999) compared to one and two years ago. Only half of the supermarkets in Tegucigalpa and none in the other small towns reported a change in sales. Sixty percent of the supermarkets located in small towns reported that they sold the same amount of tilapia in 1999 compared to 1998, and 29% indicated that they were

Table 18. Use of promotion as a marketing strategy to sell tilapia, by region. Supermarket survey, Honduras, 1999.

Category	Region of Country					
	Central-South		*North*		*Total*	
	N	%	N	%	N	%
Used Promotion	5	42	6	60	11	50
Did Not Use Promotion	7	58	4	40	11	50
Total	12	100	10	100	22	100

Table 19. Means of promotion used, by region. Supermar ket survey, Honduras, 1999.
[a] Multiple responses result in percentages that total more than 100%.
[b] News circular, TV, in-store samples, and coupons.

Type of Promotion	Region of Country					
	Central-South		*North*		*Total*	
	N	%	N	%	N	% [a]
In-Store Signs	5	71	6	100	11	85
Discounted Specials	6	86	5	83	11	85
Newspaper	4	57	3	50	7	54
Radio	2	29	1	17	3	23
Other [b]	2	29	1	17	3	23

selling the same amount compared to 1997. Only one supermarket in Tegucigalpa reported lower sales in the survey year compared to one and two years ago.

Higher percentages of respondents (55% in the North and 40% in Central-South) with a specialized fish section reported selling more tilapia in 1999 than in 1998 and 1997. All supermarkets in the Central-South and North regions without specialized fish sections reported lower tilapia sales in the survey year compared to one and two years ago. This may indicate the importance of specialized fish sections to increase sales of tilapia. It was also interesting that a higher percentage (57%) of supermarkets that cited international clientele as the most important clientele group in their establishments were selling more tilapia than supermarkets with other types of clientele groups.

All respondents who sold tilapia supplied by fish farmers and from Nicaragua reported that they were selling more tilapia in the survey year as compared to 50% of those whose tilapia was supplied by wholesalers who purchased tilapia from the North and 40% of those whose wholesalers purchased tilapia products from the Central-South.

Table 20. Preferred product forms by supermarket managers in Honduras. Supermarket survey, Honduras, 1999.

Product Form	Region of Country					
	Central-South		*North*		*Total*	
	N	%	N	%	N	%
Fresh Whole-dressed	10	59	7	41	17	68
Fresh Fillets	1	17	5	83	6	24
Frozen Whole-dressed	2	100	0	0	2	8
Total	13	52	12	48	25	100

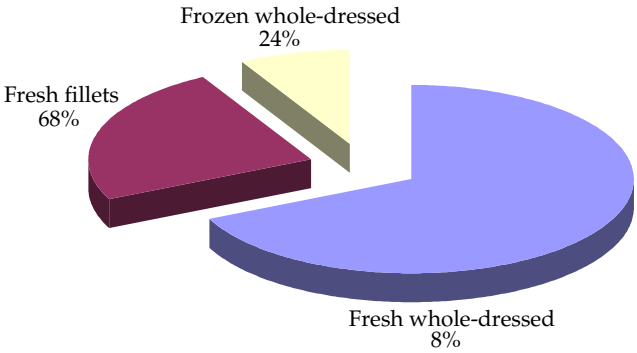

Figure 5. Tilapia product form preferences of supermarket managers. Supermarket survey, Honduras, 1999.

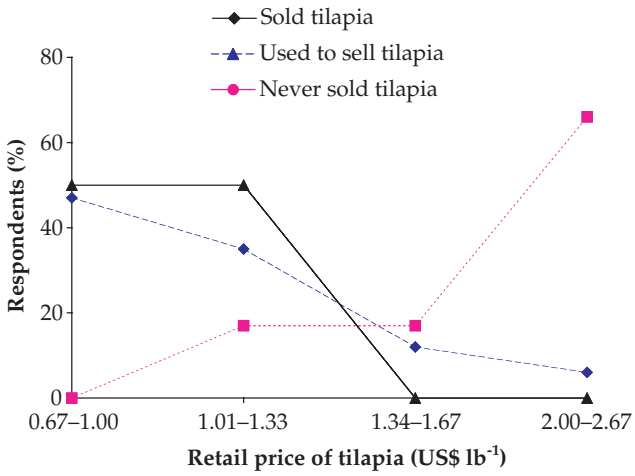

Figure 6. Frequency distribution of retail prices (US$lb^{-1}) reported by supermarket managers of tilapia by product form. Supermarket survey, Honduras, 1999.

Half of the supermarket respondents used some form of promotion (Table 18). However, 60% of the respondents in the North promoted tilapia, while only 42% in the Central-South region did so. In-store signs (85%), discounted specials (85%), and newspaper advertisements (54%) were the most common forms of promotion (Table 19). In addition, 23% of the supermarkets interviewed also used radio advertising to promote tilapia sales.

The top-selling tilapia product form was fresh whole-dressed tilapia (68%), followed by fresh tilapia fillets (24%) and frozen whole-dressed fish (8%) (Table 20; Figure 5). Fresh whole-dressed tilapia was preferred by 59% of supermarket respondents in the Central-South region compared with only 41% in the North region. In contrast, fresh tilapia fillets were the preferred product form by 83% of supermarkets in the North. No supermarkets in the North sold frozen whole-dressed fish, while two supermarkets in the Central-South did.

Supermarkets in the Central-South that purchased tilapia primarily from wholesalers preferred whole-dressed tilapia. However, in the North, 44% of those who bought from wholesalers preferred fresh fillets. Those who purchased from farmers purchased both whole-dressed and filleted tilapia.

The majority (80%) of supermarkets in the Central-South region that purchased tilapia from

Table 21. Volume sold (lb d^{-1}), by tilapia product form. Supermarket survey, Honduras, 1999.
[a] Based on the number of respondents.

Tilapia Product Form	Amount Sold (lb d^{-1})									
	0–10		*20–30*		*40–50*		*> 70*		*Total*	
	N	%	N	%	N	%	N	%	N	%
Fresh Whole-dressed	7	41	6	35	2	12	2	12	17	68
Fresh Fillets	2	33	2	33	1	17	1	17	6	24
Frozen Whole-dressed	0	0	0	0	1	50	1	50	2	8
Total of Respondents [a]	9	36	8	32	4	16	4	16	25	100

Table 22. Retail price of tilapia, by product form. Supermarket survey, Honduras, 1999.

Product Form	Retail Price (US$ lb^{-1})										Weighted Average (US$ lb^{-1})
	0.83		*1.18*		*1.50*		*2.35*		*Total*		
	N	%	N	%	N	%	N	%	N	%	
Fresh Whole-dressed	8	47	6	35	2	12	1	6	17	68	1.12
Fresh Fillets	0	0	1	17	1	17	4	66	6	24	2.01
Frozen Whole-dressed	1	50	1	50	0	0	0	0	2	8	1.05
Total	9	36	8	32	3	12	5	20	25	100	1.32

Table 23. Weekly sales volume of supermarkets surveyed relating to the price of tilapia product form. Supermarket survey, Honduras, 1999.
[a] Based on the number of respondents.

Weekly Sales Volume (US$)	Tilapia Product Form (US$ lb^{-1})																		Weighted Average (US$ lb^{-1})
	Fresh Whole-dressed						*Frozen Whole-dressed*						*Fresh Fillet*				*Total*		
	0.83		1.18		> 1.30		0.83		1.18		> 1.30		0.83		1.18		> 1.30				
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	
< 36,000	4	44	2	22	1	11	1	11	1	11	0	0	0	0	0	0	0	0	9	38	1.06
36,000–67,500	1	8	3	25	2	17	0	0	0	0	0	0	1	8	0	0	5	38	12	50	1.55
67,500–89,100	2	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	8	0.83
89,100–134,100	1	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4	1.00
Total [a]	8	33	5	21	3	13	1	4	1	4	0	0	1	4	0	0	5	21	24	100	1.28

suppliers located in the Central-South preferred fresh whole-dressed fish, and 20% preferred frozen whole-dressed tilapia. Supermarkets that purchased tilapia from the North preferred fresh fillets. This could be because the majority of tilapia farms are located in this region. Only one supermarket in the North region that purchased tilapia from fish farms said that it preferred fresh whole-dressed fish.

Tilapia volumes sold daily were low (Table 21). Thirty-six percent of the supermarket respondents indicated that they sold from 0 to 10 lb d^{-1}, another 32% said that they sold from 20 to 30 lb d^{-1}, 16% sold between 40 and 50 lb d^{-1}, and another 16% sold more than 70 lb d^{-1}. Forty-one percent of the supermarkets

Table 24. Wholesale price of tilapia, by product form. Supermarket survey, Honduras, 1999.

Product Form	Wholesale Price (US$ lb^{-1})								Weighted Average (US$ lb^{-1})
	0.50		*0.87*		*> 1.33*		*Total*		
	N	%	N	%	N	%	N	%	
Fresh Whole-dressed	5	31	10	63	1	6	16	70	0.77
Fresh Fillets	0	0	1	20	4	80	5	22	1.13
Frozen Whole-dressed	0	0	2	100	0	0	2	8	0.87
Total	5	22	13	57	5	22	23	100	0.86

Table 25. Type of tilapia supplier, by region. Supermarket survey, Honduras, 1999.
[a] Multiple answers to this question resulted in percentage totals over 100%.

Type of Supplier	Region of Country					
	Central-South		*North*		*Total*	
	N	%	N	%	N	%
Wholesalers	11	48	7	58	18	51
Fishermen	0	0	1	8	1	3
Fish Farmers	5	22	2	17	7	20
Processor/Producers	1	4	1	8	2	6
No Answer	8	35	2	17	10	29
Total [a]	22	109	12	108	35	109

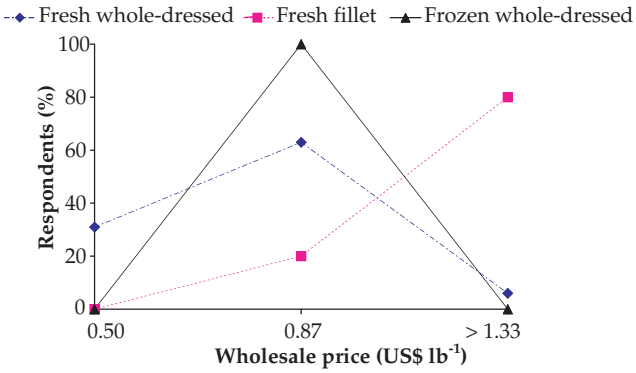

Figure 7. Frequency distribution of wholesale prices (US$lb^{-1}) reported by supermarket managers of tilapia by product form. Supermarket survey, Honduras, 1999.

interviewed sold between 0 and 10 lb d^{-1} of fresh whole-dressed tilapia, and 33% sold that amount of fresh fillets. Moreover, 35% of supermarkets reported 20 to 30 lb d^{-1} of fresh whole-dressed fish, and 33% reported the same sales of the fresh fillets. Supermarkets that were selling frozen whole-dressed tilapia reported sales above 40 lb d^{-1}.

The most frequently mentioned price (47% of responses) for fresh whole-dressed tilapia was between $0.66 and $1.00 lb^{-1}, but prices as high as $2.35 lb^{-1} were reported (Table 22; Figure 6). Fresh fillet prices were mostly in the range of $1.06 to $2.70 lb^{-1}. Prices of frozen whole-dressed tilapia averaged $1.50 lb^{-1}.

Forty-four percent of the supermarket respondents with a weekly sales volume less than $36,000 reported an average retail price of fresh whole-dressed tilapia of $0.83 lb^{-1}, 22% reported a retail price from $1.00 to 1.30 lb^{-1}, and only 11% indicated a retail price more than $1.30 lb^{-1} (Table 23). More than one-quarter of the supermarkets interviewed with a weekly sales volume from $36,000 to $67,500 reported a retail price of fresh tilapia fillets over $1.30 lb^{-1}, and only 8% indicated a retail price of fresh tilapia fillets from $0.67 to 1.00 lb^{-1}.

Wholesale prices of fresh whole-dressed tilapia products averaged $ 0.83 lb^{-1} and ranged from $0.33 to more than $1.33 lb^{-1} (Table 24; Figure 7). Fresh tilapia fillet wholesale prices averaged $1.20 lb^{-1} and ranged from $0.73 to more that $1.33 lb^{-1} but the majority of respondents (80%) reported prices over $1.33 lb^{-1}. Wholesale prices of frozen whole-dressed tilapia products averaged $0.87 lb^{-1} and ranged from $0.73 to $1.00 lb^{-1}.

Farm-Raised Tilapia Marketing Channels Compared to Wild-Caught Tilapia Marketing Channels

Over half of the respondents purchased tilapia from wholesalers (Table 25). Another 20% purchased tilapia from fish farms. There were no apparent regional differences in the types of suppliers of

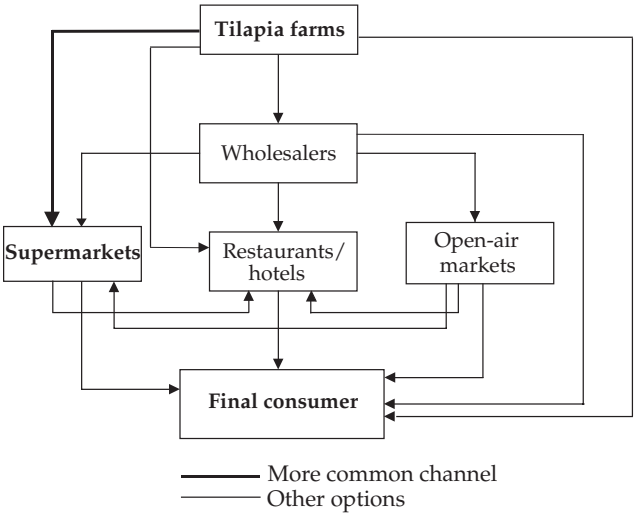

Figure 8. Marketing channels for farm-raised tilapia in Honduras. Supermarket survey, Honduras, 1999.

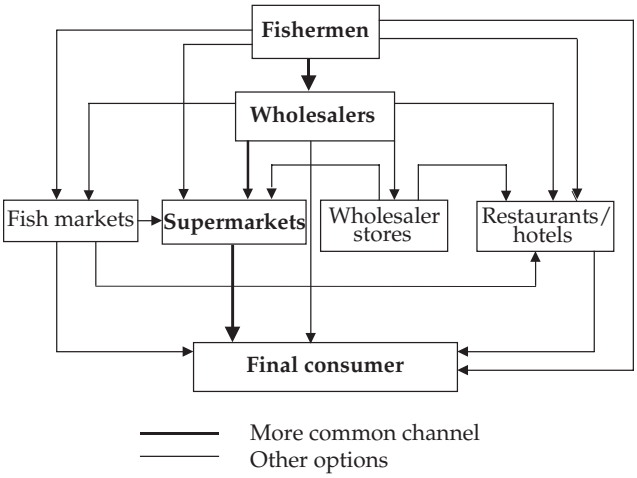

Figure 9. Marketing channels for wild-caught tilapia in Honduras. Supermarket survey, Honduras, 1999.

tilapia. This pattern is consistent with the overall pattern of suppliers of general fish and seafood discussed above. One exception is that more general fish and seafood was purchased from fishermen and more tilapia purchased from fish farms.

Figure 8 presents the more important marketing channels used for farm-raised tilapia in Honduras. The majority of supermarket managers who were selling farm-raised tilapia indicated that they purchased this product directly from tilapia farms. Wholesalers were mentioned as the second most important marketing channel for purchasing farm-raised tilapia.

The majority of supermarkets interviewed mentioned that wholesalers were the most important marketing channel for wild-caught tilapia in both the Central-South and North regions. Only a few managers mentioned that fishermen sold tilapia directly to their store (Figure 9).

Supply of Tilapia

Almost 70% of the supermarkets interviewed purchased tilapia from suppliers in the Central-South region, 50% purchased tilapia from the North, and 18% from Nicaraguan suppliers. A few (9%) purchased tilapia directly from fish farmers.

Fewer respondents (41%) purchased general seafood from suppliers in the Central-South region, 39% purchased from suppliers in the North, and only 6% purchased product from Nicaraguan suppliers.

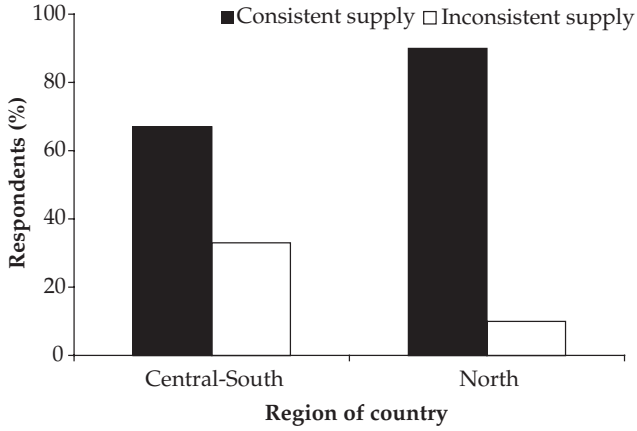

Figure 10. Consistency of tilapia supplies by region. Supermarket survey, Honduras, 1999.

Most of the supermarkets interviewed in the Central-South region purchased seafood and other finfish from suppliers from the Central-South region. A few supermarkets (four) purchased tilapia from Nicaragua. In the North region, the majority of the supermarket respondents purchased tilapia from suppliers in the North region.

The majority of supermarkets purchased from only one or two suppliers. The majority (86%) of the supermarkets that sold tilapia likewise purchased from only one or two different suppliers (Table 26). None had more than four suppliers. Moreover, only 14% responded that they had purchased from three or four suppliers. Most of the tilapia suppliers were from the Central-South and North regions.

Table 26. Number and percentage of suppliers of tilapia to supermarkets, by region. Supermarket survey, Honduras, 1999.

Number of Tilapia Suppliers	Region of Country					
	Central-South		*North*		*Total*	
	N	%	N	%	N	%
1–2	11	92	8	80	19	86
3–4	1	8	2	20	3	14
Total	12	100	10	100	22	100

Table 27. Consistency of tilapia supplies by region. Supermarket survey, Honduras, 1999.

Tilapia Supply	Region of Country					
	Central-South		*North*		*Total*	
	N	%	N	%	N	%
Consistent	8	67	9	90	17	77
Inconsistent	4	33	1	10	5	23
Total	12	100	10	100	22	100

The majority of the supermarkets that purchased from fish farmers indicated that their tilapia supplies were consistent (Table 28). A higher percentage of those who purchased from wholesalers indicated that their supplies were consistent.

The most commonly cited supply problem was that tilapia was unavailable at certain times of the year (Table 29). All respondents who reported supply problems said that the greatest problem was lack of availability at certain times of the year. High price followed as the second greatest problem. There were more respondents with suppliers from the Central-South region who indicated that their greatest supply problem was that tilapia were unavailable at certain times of the year.

Table 28. Consistency of tilapia suppliers by region. Supermarket survey, Honduras, 1999.

Tilapia Supply	Type of Supplier					
	Wholesalers		*Fish Farmers*		*Processor/Producer*	
	N	%	N	%	N	%
Consistent	11	73	6	86	2	100
Inconsistent	4	27	1	14	0	0
Total	15	100	7	100	2	100

Table 29. Problems indicated with the supply of tilapia, by region. Supermarket survey, Honduras, 1999.
[a] Multiple answers to this question resulted in percentage totals over 100%.

Reported Supply Problems	Region of Country					
	Central-South		*North*		*Total*	
	N	%	N	%	N	%
Unavailable at Certain Times of the Year	4	100	1	100	5	100
High Price	1	25	0	0	1	20
Total	5	125 [a]	1	100	6	120 [a]

Problems with Tilapia Supplies

More than three-quarters (77%) of respondents indicated that their supply of tilapia has been consistent (Table 27; Figure 10), while the remaining 23% indicated that it had not been. Thirty-three percent of the respondents in the Central-South region reported inconsistent tilapia supplies, whereas only 10% of respondents in the North reported inconsistent supplies of tilapia. There was little reported difference in consistency of supply due to the location of suppliers.

Supermarket respondents in the Central-South region who purchased tilapia from wholesalers reported no quality problems, and 88% of respondents in the North reported the same. Of those who reported quality problems and were supplied by wholesalers, the problems mentioned most often were insufficient quality, lack of availability, unreliable quality, and earthy flavor (100%). Only one respondent supplied by a processor reported a lack of availability of tilapia. Supermarkets interviewed

Table 30. Supermarkets that were part of a chain or independent and reported problems with tilapia supply, by region. Supermarket survey, Honduras, 1999.

Tilapia Supply	**Region of Country**									
	Central-South				*North*				*Total*	
	Chain		Independent		Chain		Independent			
	N	%	N	%	N	%	N	%	N	%
Consistent	4	57	4	80	6	100	3	75	17	77
Inconsistent	3	43	1	20	0	0	1	25	5	23
Total	7	100	5	100	6	100	4	100	22	100

Table 31. Mean rating of various attributes of tilapia, by region. Supermarket survey, Honduras, 1999.

Attributes	**Sold Tilapia**			**Never Sold Tilapia**			**Used to Sell Tilapia**			**Total**
	Central-South	*North*	*Total*	*Central-South*	*North*	*Total*	*Central-South*	*North*	*Total*	
Number of Respondents	12	10	22	15	4	19	11	2	13	54
Reliable Quality	6.83	7.70	7.23	5.69	6.00	5.75	5.18	7.00	5.46	6.31
Readily Available	7.67	8.80	8.18	4.50	8.00	4.73	3.73	7.50	4.31	6.14
Consumers Like to Eat	6.67	9.00	7.73	6.31	7.75	6.65	7.09	5.50	6.85	7.15
High Quality Fish	8.33	9.00	8.64	7.87	9.50	8.06	8.00	7.50	7.92	8.27
Little Fishy Odor	8.18	9.10	8.62	5.31	7.00	5.43	5.91	5.50	5.85	6.94
Tastes Like Earth	4.33	3.00	3.73	4.62	9.00	5.20	4.90	9.00	5.58	4.63
Nice Fresh Flavor	7.42	9.20	8.23	7.00	9.50	7.33	7.60	7.50	7.58	7.80
Easy to Prepare	7.75	8.60	8.14	8.27	9.00	8.31	8.45	7.50	8.31	8.24
Price Is Too High	3.83	4.90	4.32	4.75	6.00	4.89	3.10	3.50	3.17	4.12
Patrons Like Variety	4.50	8.30	6.40	6.60	6.25	6.50	7.90	7.00	7.75	6.78
Size Is Too Small	4.75	3.30	4.09	4.00	-	4.00	3.89	10.00	5.00	4.30

Table 32. Mean rating of various attributes of tilapia, by type of tilapia suppliers and by region. Supermarket survey, Honduras, 1999.
[a] Some respondents indicated more than one tilapia supplier.

Attributes	**Region of Country**							
	Central-South			*North*				*Total*
	Wholesaler	Farmers	Processor/ Producer	Wholesaler	Farmers	Processor/ Producer	Fishermen	
Number of Respondents	8	5	1	7	2	1	1	22 [a]
Reliable Quality	6.62	6.20	10.00	7.71	9.00	10.00	5.00	7.23
Readily Available	6.75	7.40	10.00	8.71	9.50	10.00	8.00	8.18
Consumers Like to Eat	7.12	7.20	5.00	9.14	9.50	10.00	7.00	7.73
High Quality Fish	8.88	7.00	10.00	8.86	9.50	5.00	9.00	8.64
Little Fishy Odor	9.29	7.80	5.00	8.86	9.50	10.00	10.00	8.62
Tastes Like Earth	3.75	5.60	3.00	3.00	2.00	1.00	5.00	3.73
Nice Fresh Flavor	8.75	6.60	3.00	9.14	9.00	10.00	10.00	8.23
Easy to Prepare	8.38	6.40	10.00	8.14	9.50	1.00	10.00	8.14
Price Is Too High	3.88	4.40	3.00	5.71	4.00	10.00	1.00	4.32
Patrons Like Variety	4.00	4.60	5.00	8.43	8.50	10.00	7.00	6.40
Size Is Too Small	4.50	5.00	5.00	3.86	2.50	6.00	1.00	4.09

Table 33. Mean rating of various attributes of tilapia, by supermarkets that sold, never sold, and used to sell tilapia. Supermarket survey, Honduras, 1999.

Attributes	Sold Tilapia		Never Sold Tilapia		Used to Sell Tilapia		Total
	Chain	*Independent*	*Chain*	*Independent*	*Chain*	*Independent*	
Number of Respondents	13	9	9	10	10	3	54
Reliable Quality	7.00	7.56	6.00	5.43	5.40	5.67	6.31
Readily Available	8.08	8.33	4.88	4.57	4.00	5.33	6.14
Consumers Like to Eat	8.00	7.33	6.67	6.62	7.70	4.00	7.15
High Quality Fish	9.00	8.11	8.00	8.12	8.00	7.67	8.27
Little Fishy Odor	8.58	8.67	5.14	5.71	5.70	6.33	6.94
Tastes Like Earth	3.69	3.78	5.62	4.71	5.56	5.67	4.63
Nice Fresh Flavor	8.31	8.11	6.75	8.00	7.67	7.33	7.80
Easy to Prepare	7.77	8.67	7.89	8.86	8.60	7.33	8.24
Price Is Too High	4.54	4.00	4.83	5.00	2.89	4.00	4.12
Patrons Like Variety	6.18	6.67	6.50	6.50	8.40	4.50	6.78
Size Is Too Small	4.15	4.00	2.00	6.00	4.11	9.00	4.30

Table 34. Mean rating of various attributes of tilapia by supermarkets that were part of a chain or independent, by region. Supermarket survey, Honduras, 1999.

Attributes	Region of Country				Total
	Central-South		*North*		
	Chain	Independent	Chain	Independent	
Number of Respondents	24	14	8	8	54
Reliable Quality	5.67	6.42	7.88	6.57	6.31
Readily Available	4.78	6.14	9.25	7.40	6.14
Consumers Like to Eat	6.96	6.08	9.25	7.25	7.15
High Quality Fish	8.21	7.79	9.00	8.67	8.27
Little Fishy Odor	6.24	6.64	8.12	8.80	6.94
Tastes Like Earth	4.77	4.31	4.75	4.67	4.63
Nice Fresh Flavor	7.00	7.85	9.62	8.17	7.80
Easy to Prepare	7.96	8.50	8.38	8.60	8.24
Price Is Too High	3.40	4.70	5.75	3.20	4.12
Patrons Like Variety	6.37	6.27	8.75	6.50	6.78
Size Is Too Small	3.20	6.18	5.29	3.20	4.30

that purchased tilapia from fish farmers and fishermen reported no problems with the quality of tilapia.

None of the supermarkets interviewed in the Central-South region reported quality problems. In the North region, only one supermarket that purchased tilapia from fish farms reported quality problems. Only off-flavor and freshness were mentioned as quality problems by supermarket managers interviewed in both regions.

All supermarket chains in the North region reported a consistent supply of tilapia, compared with only 57% in the Central-South region (Table 30). Independent supermarkets also reported a high percentage of consistency of tilapia supply.

Transportation

All respondents transported their own tilapia; wholesalers did not deliver tilapia. Supermarket buyers purchased tilapia from wholesale market locations and transported tilapia back to their stores. In contrast, 63% of supermarkets had general fish and seafood delivered to their store.

Attitudes toward Tilapia

Table 31 and Figure 11 present preference ratings for supermarkets that purchased tilapia for a variety of attributes. On a scale of 1 to 10, a score less than 5

Table 35. Mean rating of various attributes of tilapia, by origin of supermarket investors and by region. Supermarket survey, Honduras, 1999.
[a] One manager did not answer the question.

Attributes	Sold Tilapia			Never Sold Tilapia			Used to Sell Tilapia			Total
	Honduran	*Central American*	*Asian*	*Honduran*	*Central American*	*Asian*	*Honduran*	*Central American*	*European*	
Number of Respondents	15	5	2	13	5	1	9	1	2	54 [a]
Reliable Quality	7.07	7.20	8.50	5.91	5.40	-	5.33	3.00	7.00	6.31
Readily Available	7.67	9.80	8.00	4.89	4.00	7.00	4.78	3.00	2.50	6.14
Consumers Like to Eat	8.07	7.20	6.50	6.91	6.60	4.00	7.33	3.00	8.50	7.15
High Quality Fish	8.13	9.60	10.00	8.64	6.80	8.00	7.56	10.00	9.00	8.27
Little Fishy Odor	8.43	8.80	9.50	6.33	3.50	5.00	6.33	2.00	7.50	6.94
Tastes Like Earth	4.73	1.60	1.50	5.90	4.50	1.00	7.25	2.00	2.00	4.63
Nice Fresh Flavor	8.20	8.20	8.50	8.90	4.00	5.00	8.00	9.00	8.00	7.80
Easy to Prepare	7.87	8.40	9.50	8.50	7.60	10.00	8.44	8.00	7.50	8.24
Price Is Too High	4.40	3.20	6.50	4.60	5.33	5.00	3.38	5.00	1.00	4.12
Patrons Like Variety	6.46	6.20	6.50	6.36	7.00	-	7.78	-	6.50	6.78
Size Is Too Small	4.27	2.80	6.00	4.67	2.33	5.00	5.12	-	4.50	4.30

Table 36. Mean rating of various attributes of tilapia, by clientele group of supermarkets that sold, never sold, and used to sell tilapia. Supermarket survey, Honduras, 1999. (Note: HI = high-income, MI = middle-income, LI = low-income, and Int'l = international.)
[a] The respondents could choose more than one clientele group.

Attributes	Clientele Group															
	Sold Tilapia					*Never Sold Tilapia*					*Used to Sell Tilapia*					*Total*
	HI Mestizo	MI Mestizo	LI Mestizo	Int'l	MI Black	HI Mestizo	MI Mestizo	LI Mestizo	Int'l	MI Black	HI Mestizo	MI Mestizo	LI Mestizo	Int'l	MI Black	
Number of Respondents	14	17	5	9	1	5	16	13	0	1	5	11	4	4	2	54 [a]
Reliable Quality	7.50	7.12	5.80	7.33	9.00	5.25	6.00	5.09	-	7.00	5.40	5.64	3.25	6.50	7.00	6.31
Readily Available	8.43	7.82	6.80	8.56	9.00	2.75	4.75	4.60	-	5.00	1.40	4.36	5.50	5.00	7.50	6.14
Consumers Like to Eat	8.00	8.12	7.20	7.33	9.00	6.00	7.00	6.17	-	8.00	8.20	6.73	5.50	7.50	5.50	7.15
High Quality Fish	8.71	8.47	9.00	8.44	9.00	7.00	8.50	7.55	-	10.00	8.20	7.91	7.50	8.25	7.50	8.27
Little Fishy Odor	8.46	8.94	8.80	8.56	9.00	5.50	5.73	4.44	-	8.00	5.00	5.82	6.25	6.75	5.50	6.94
Tastes Like Earth	3.07	4.06	4.40	2.44	8.00	5.00	5.58	4.90	-	1.00	3.25	5.45	7.00	5.00	9.00	4.63
Nice Fresh Flavor	8.29	8.71	8.00	7.78	10.00	7.50	7.67	6.10	-	10.00	9.00	7.55	6.25	7.67	7.54	7.80
Easy to Prepare	8.21	8.18	8.80	6.89	10.00	7.00	8.92	8.27	-	10.00	8.80	8.18	8.25	8.50	7.50	7.80
Price Is Too High	4.21	4.00	3.40	4.67	9.00	3.50	5.33	5.33	-	5.00	2.20	2.90	6.00	2.75	3.50	4.12
Patrons Like Variety	6.54	6.53	4.50	5.67	9.00	5.00	7.09	5.78	-	10.00	8.00	7.50	8.75	7.50	7.00	6.78
Size Is Too Small	3.71	3.82	4.00	4.22	9.00	1.00	4.25	4.25	-	5.00	1.50	5.78	4.33	4.75	10.00	4.30

indicated disagreement, 5 was a neutral score, and a score above 5 indicated agreement. In other words, the higher the score, the more strongly the respondents agreed with the statement. Respondents rated tilapia favorably on attributes such as being a high-quality fish, easy to prepare, fresh flavor, consumers like to eat, little odor, patrons like variety, reliable quality, and ready availability (Table 31). Of these attributes, quality received the highest rating along with ease of preparation. The only three statements with which respondents disagreed were that tilapia tastes like earth, the price is too high, and the size too small. In other words, respondents indicated that off-flavor was not a problem and that tilapia price and sizes were acceptable. Respondents who sold tilapia generally rated it higher than those who used to sell or who never sold tilapia. Responses were similar between those who used to sell and those who never sold tilapia. Respondents in the North rated tilapia higher on all attributes.

The mean ratings of tilapia attributes from the respondents who purchased this product from

Table 37. Mean rating of various attributes of tilapia by supermarkets with a fish market section in Honduras. Supermarket survey, Honduras, 1999.

Attributes	Availability of Fish Market Section						
	Sold Tilapia		*Never Sold Tilapia*		*Used to Sell Tilapia*		Total
	Yes	No	Yes	No	Yes	No	
Number of Respondents	19	3	3	16	10	3	54
Reliable Quality	7.32	6.67	4.00	6.00	5.70	4.67	6.31
Readily Available	8.16	8.33	8.00	4.50	4.40	4.00	6.14
Consumers Like to Eat	7.84	7.00	7.00	6.57	7.10	6.00	7.15
High Quality Fish	8.84	7.33	9.00	8.00	7.90	8.00	8.27
Little Fishy Odor	8.67	8.33	7.00	5.31	5.90	5.67	6.94
Tastes Like Earth	3.47	5.33	8.00	5.00	5.56	5.67	4.63
Nice Fresh Flavor	8.42	7.00	9.00	7.21	7.33	8.33	7.80
Easy to Prepare	8.16	8.00	9.00	8.27	8.40	8.00	8.24
Price Is Too High	4.53	3.00	6.00	4.75	3.20	3.00	4.12
Patrons Like Variety	6.29	7.00	6.00	6.64	7.80	7.50	6.78
Size Is Too Small	4.05	4.33	-	4.00	4.70	8.00	4.30

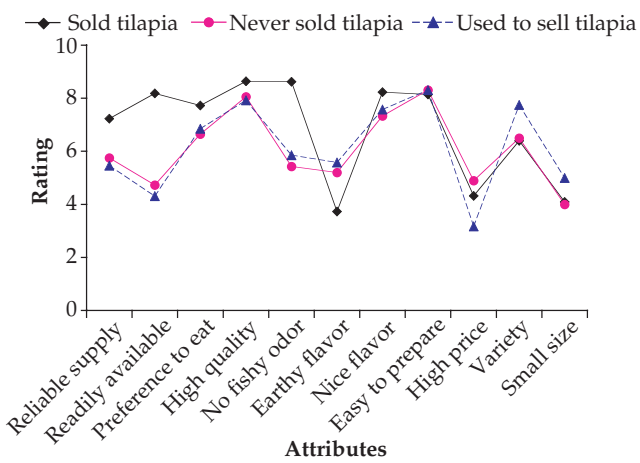

Figure 11. Attitudes of supermarket managers toward tilapia in Honduras. Supermarket survey, Honduras, 1999.

wholesalers were positive in both regions but were higher in the North (7.42) compared to the Central-South region (6.56) (Table 32). In the North region, supermarkets that purchased tilapia from fish farmers rated it higher especially for attributes such as being readily available, easy to prepare, consumers liking to eat it, being a high-quality fish, and having little fishy odor (9.50). The respondents in the North who purchased from processors perceived the price of tilapia as being too high (10.0). This was not true in the Central-South region (3.0).

Supermarkets that purchased tilapia from fish farmers rated it higher on attributes than those who purchased tilapia from wholesalers (Table 32). However, respondents in the Central-South region who purchased from farmers rated it lower on being high-quality, having little fishy odor, and having nice fresh flavor than those who purchased from wholesalers.

Chain supermarkets that sold tilapia rated it highest on attributes such as being a high-quality fish, having nice fresh flavor, and consumers liking to eat it compared to independent supermarkets (Table 33). In general, the chain supermarkets that sold tilapia rated it higher on all attributes compared to supermarkets that never sold tilapia and to those that used to sell tilapia. Managers of independent supermarkets that never sold and used to sell tilapia perceived that the tilapia in the market were too small. None of the supermarkets interviewed perceived the price of tilapia as being too high.

Supermarket chains in the North region rated the attributes of tilapia higher than those in the Central-South region (Table 34). Chain supermarkets in the Central-South rated the following attributes highest: high-quality fish (8.21), easy to prepare (7.96), and nice fresh flavor (7.0). Independent supermarkets in the Central-South perceived the size of tilapia marketed as too small (6.18). Chain supermarkets in the North rated tilapia higher on attributes such as being too expensive and too small in size than did

Table 38. Mean rating of various attributes of tilapia related to the likelihood of adding a specialized fish section. Supermarket survey, Honduras, 1999.
[a] Three supermarkets were selling tilapia but did not have a specialized fish section. Three managers did not answer this question.

Attributes	Likelihood to Add a Specialized Fish Section				
	Never Sold Tilapia		*Used to Sell Tilapia*		*Total*
	Likely	Unlikely	Likely	Unlikely	
Number of Respondents	8	6	1	1	22 [a]
Reliable Quality	7.67	3.50	10.00	1.00	5.76
Readily Available	4.29	4.67	8.00	1.00	4.41
Consumers Like to Eat	7.14	4.80	8.00	7.00	6.47
High Quality Fish	9.50	5.33	8.00	6.00	8.00
Little Fishy Odor	6.00	3.80	7.00	8.00	5.38
Tastes Like Earth	5.25	4.25	7.00	8.00	5.12
Nice Fresh Flavor	7.50	5.25	8.00	8.00	7.41
Easy to Prepare	8.88	7.17	9.00	7.00	8.22
Price Is Too High	5.40	3.00	1.00	-	4.40
Patrons Like Variety	7.40	4.75	5.00	10.00	6.77
Size Is Too Small	3.33	5.00	8.00	-	4.36

Table 39. Mean rating of various attributes of tilapia, by location of supermarkets that sold, never sold, and used to sell tilapia. Supermarket survey, Honduras, 1999.

Attributes	Sold Tilapia			Never Sold Tilapia			Used to Sell Tilapia			Total
	Tegucigalpa	*San Pedro Sula*	*Small Towns*	*Tegucigalpa*	*San Pedro Sula*	*Small Towns*	*Tegucigalpa*	*San Pedro Sula*	*Small Towns*	
Number of Respondents	7	10	5	5	2	12	9	1	3	54
Reliable Quality	7.14	7.70	6.40	6.40	8.50	4.78	4.89	10.00	5.67	6.31
Readily Available	8.29	8.80	6.80	3.75	8.00	4.80	3.33	10.00	5.33	6.14
Consumers Like to Eat	6.43	9.00	7.00	6.20	9.50	6.30	7.44	10.00	4.00	7.15
High Quality Fish	9.14	9.00	7.20	7.20	9.50	8.20	7.78	10.00	7.67	8.27
Little Fishy Odor	8.00	9.10	8.50	2.75	7.00	6.44	6.22	1.00	6.33	6.94
Tastes Like Earth	3.14	3.00	6.00	5.20	9.00	4.25	5.00	10.00	5.67	4.63
Nice Fresh Flavor	7.14	9.20	7.80	4.60	9.50	8.50	7.38	10.00	7.33	7.80
Easy to Prepare	7.57	8.60	8.00	7.20	9.00	8.80	8.44	10.00	7.33	8.24
Price Is Too High	4.14	4.90	3.40	5.33	6.00	4.40	3.12	1.00	4.00	4.12
Patrons Like Variety	3.33	8.30	6.25	5.33	7.00	6.78	8.22	10.00	4.50	6.78
Size Is Too Small	4.14	3.30	5.60	2.33	-	4.71	3.38	10.00	9.00	4.30

supermarkets in the Central-South region.

Honduran-owned supermarkets that sold tilapia rated it highest on all attributes of tilapia compared to supermarkets that either never sold or used to sell tilapia (Table 35). Asian-owned supermarkets that sold tilapia had more favorable perceptions of tilapia attributes than Honduran and other Central American–owned supermarkets. Only the Honduran-owned supermarkets that used to sell tilapia indicated that it tasted like earth (ranked 7.25).

In general, supermarkets that sold tilapia and had a weekly sales volume less than $36,000 had the most favorable perceptions of the attributes of tilapia compared to supermarkets with higher weekly sales volumes. On the other hand, supermarkets that used to sell tilapia considered its size as being too small (ranked 8.75) and also indicated that tilapia tasted like earth (ranked 7.40). Supermarkets that never sold tilapia and had weekly sales volumes greater than $67,500 rated tilapia higher than supermarkets with lower weekly sales volumes.

The supermarket that both cited middle-income blacks as the principal clientele group in their establishments and sold tilapia had the most positive perceptions of the attributes of tilapia. This supermarket also rated tilapia high on being too expensive, too small, and tasting like earth (Table 36). In the supermarkets that sold tilapia and cited middle-

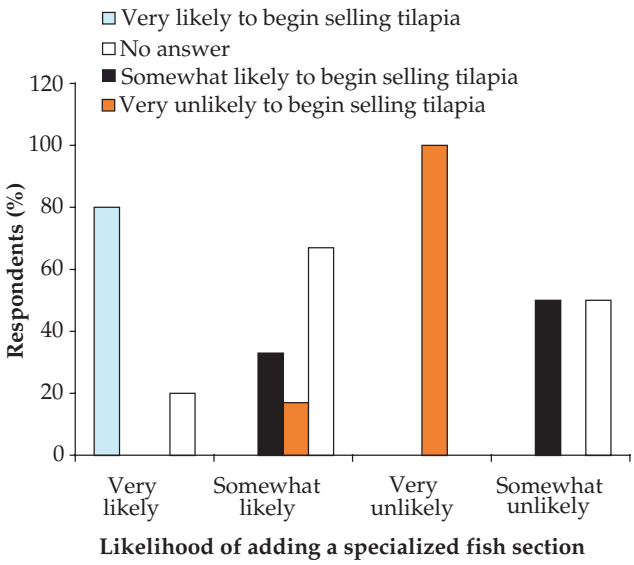

Figure 12. Likelihood of supermarkets adding a specialized fish section by likelihood of those stores beginning to sell tilapia.

income mestizos as the most frequent clientele group, little fishy odor (8.94), nice fresh flavor (8.71), high-quality fish (8.47), easy to prepare (8.18), and consumers like to eat (8.12) were the attributes that received the higher ratings. In general, supermarkets that never sold tilapia and indicated that middle-income mestizos were their most important clientele group had more positive perceptions of tilapia attributes compared to supermarkets that cited other clientele groups.

Supermarkets that reported a specialized fish section and sold tilapia rated it higher on all attributes as compared to supermarkets without a fish section (Table 37). All supermarkets that sold, never sold, and used to sell tilapia that had a specialized fish section rated tilapia high on attributes such as being a high-quality fish, having a nice fresh flavor, consumers liking to eat tilapia, being easy to prepare, and that the patrons like the variety. Only the supermarkets that used to sell tilapia and didn't have a fish section perceived that the price of tilapia was too high.

The supermarkets that reported that they used to sell tilapia and were likely to add a specialized fish section rated tilapia higher on attributes such as consumers like to eat (10), easy to prepare (10), patrons like variety (9), nice fresh flavor (9), and little fishy odor, compared to supermarkets that never sold tilapia (Table 38). Only the supermarkets that used to sell tilapia and were unlikely to add a specialized fish section indicated that tilapia tasted like earth.

In general, supermarkets located in San Pedro Sula rated tilapia higher when compared to supermarkets located in Tegucigalpa and other small towns, although the ratings by latter were still positive (Table 39). The supermarkets located in Tegucigalpa that sold tilapia rated it high on attributes such as being a high-quality fish, having little fishy odor, being easy to prepare, having a nice fresh flavor, and having reliable quality. Establishments located in Tegucigalpa that reported never having sold tilapia or that they used to sell tilapia rated it lower on attributes such as being readily available and having little fishy odor. Supermarkets that used to sell tilapia located in San Pedro Sula and other small towns, indicated that the size of the fish in the market was too small.

Likelihood of Beginning to Sell Tilapia

Half of the supermarket managers responded that they were likely to begin selling tilapia the next year (Table 40). There were an additional 25% that indicated that they didn't know, and 25% responded that they were unlikely to begin selling tilapia. There was a marked regional difference in response to this question. All of the respondents in the North region indicated that they were likely to begin selling tilapia the next year, but only 38% of Central-South respondents indicated that they were likely to do so, and 31% were unlikely to do so.

Half of the chain supermarkets in the North region reported that they were very likely to begin selling tilapia the next year, and the other 50% responded that it was somewhat likely (Table 41). In contrast, only 23% of the supermarkets interviewed in the Central-South region said that they were very likely to begin selling tilapia the next year, and 18% responded that it was somewhat likely. In the Central-South region 18% of the supermarket participants in the survey responded that they were very unlikely to begin selling tilapia the next year, whereas in the North region none said so.

All of the supermarkets interviewed in the North region that had sales volumes of less than $67,500 indicated that they were likely to begin selling tilapia the next year compared with only 48% of the supermarkets interviewed in the Central-South region.

Table 40. Likelihood of supermarkets beginning to sell tilapia the next year, by region. Supermarket survey, Honduras, 1999.

Likelihood of Selling Tilapia	**Region of Country**					
	Central-South		*North*		*Total*	
	N	%	N	%	N	%
Likely	10	38	6	100	16	50
Unlikely	8	31	0	0	8	25
No Answer	8	31	0	0	8	25
Total	26	100	6	100	32	100

Table 41. Likelihood of supermarkets beginning to sell tilapia the next year by chain and independent, by region. Supermarket survey, Honduras, 1999.

Likelihood of Beginning to Sell Tilapia	**Region of Country**									
	Central-South				*North*				*Total*	
	Chain		Independent		Chain		Independent			
	N	%	N	%	N	%	N	%	N	%
Very Likely	4	23	2	22	1	50	3	75	10	31
Somewhat Likely	3	18	1	11	1	50	1	25	6	19
Somewhat Unlikely	0	0	0	0	0	0	0	0	0	0
Very Unlikely	3	18	5	56	0	0	0	0	8	25
No Answer	7	41	1	11	0	0	0	0	8	25
Total	17	100	9	100	2	100	4	100	32	100

Table 42. Likelihood of supermarkets beginning to sell tilapia the next year by their clientele groups, by region. Supermarket survey, Honduras, 1999.

[a] Based on the number of responses to that question for each statement. Supermarkets interviewed could select more than one clientele group.

Clientele Group	**Region of Country**																	
	Central-South								*North*								*Total*	
	Likely		Unlikely		No Answer		Total		Likely		Unlikely		No Answer		Total			
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
High-Income Mestizo	2	20	2	25	4	50	8	31	2	33	0	0	0	0	2	33	10	31
International	2	20	1	13	1	13	4	15	0	0	0	0	0	0	0	0	4	13
Middle-Income Mestizo	9	90	7	88	6	75	22	85	5	83	0	0	0	0	5	83	27	84
Low-Income Mestizo	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Middle-Income Black	0	0	1	13	0	0	1	4	2	33	0	0	0	0	2	33	3	9
Low-Income Black	1	10	1	13	0	0	1	8	1	17	0	0	0	0	1	17	3	9
Number of Respondents	10	140 [a]	8	152 [a]	8	138 [a]	26	143 [a]	6	166 [a]	0	0	0	0	6	166 [a]	32	146 [a]

supermarkets that sold tilapia and cited middle-Only one supermarket that had a weekly sales volume of more than $180,000 indicated that they were unlikely to begin selling tilapia the next year.

The majority of supermarkets in the Central-South region (90%) that indicated that middle-income mestizos were their most frequent clientele group responded that they were likely to begin selling tilapia the next year, and 83% of managers indicated likewise in the North region (Table 42). Half of the supermarkets in the Central-South region that mentioned international clientele as their most frequent group were very likely to begin selling tilapia. Thirty-three percent of supermarkets that cited high-income mestizos as their principal clientele group in the North region said that they were likely to begin selling tilapia the next year, compared to only 20% that indicated so in the Central-South.

Most supermarkets (80%) that were very likely to begin selling tilapia the next year indicated that they were very likely to add a specialized fish section. Moreover, all supermarkets that responded that they were very unlikely to begin selling tilapia the next year said that they were very unlikely to add a specialized fish section (Figure 12).

All supermarkets located in San Pedro Sula indicated that they were very likely or somewhat likely to begin selling tilapia the next year, compared to 42% in Tegucigalpa and 46% in other small towns. Forty percent of the supermarkets located in small towns and 14% of the supermarkets in Tegucigalpa responded that they were unlikely to begin selling tilapia the next year.

Conclusions

Nationwide direct personal interviews were conducted of supermarket managers to obtain additional information about markets for Honduran farm-raised tilapia. The study documented market penetration in the supermarket outlet segment and quantified the differences in purchase and consumption patterns in two regions (Central-South and North). The study further documented consumer attitudes towards tilapia in both regions.

The survey showed that tilapia is a well-known product in Honduran supermarkets. More than 40% of surveyed supermarkets reporting selling tilapia, and about 50% of supermarket managers responded they were either somewhat or very likely to begin selling tilapia the next year. Lack of demand, freshness, and seasonal availability were mentioned as primary reasons for not selling the product.

San Pedro Sula appears to have higher percentages of supermarkets interested in selling tilapia and more positive perceptions of it. Nevertheless, Tegucigalpa represents the greatest market in the country. Small towns not only have smaller populations, but have less interest and less favorable perceptions of tilapia.

Wholesalers were cited as the principal suppliers of tilapia and seafood for the supermarket segment nationwide. A few supermarkets reported purchasing tilapia directly from fish farmers.

Overall, the study indicated that supermarket managers' attitudes towards tilapia are positive. Supermarket managers perceived that their tilapia supply is consistent and readily available, and that consumers like to eat tilapia. They believed tilapia had little fishy odor, had a nice fresh flavor, was easy to prepare, came in convenient sizes, and was adequately priced. These positive attitudes seem to be correlated with the upward trend in the sale of tilapia products, as revealed by the survey.

Larger chain stores with specialized fish sections and middle- to high-income mestizo and international clients appear to have the greatest potential to increase tilapia sales. These findings need to be tested by quantitative analyses.

The negative ratings of tilapia by some respondents may be related to the poor quality of the wild-caught product also circulating on the market. It may be important for tilapia growers to differentiate their product from the wild-caught tilapia and to promote quality control programs on tilapia farms and in processing plants. These results suggest that if tilapia farmers can combine adequate marketing strategies with availability of high-quality tilapia, it may be possible to further develop the domestic market for tilapia in Honduras.

Short-term marketing strategies with more results would focus on larger supermarkets catering to international and high-income clientele groups in San Pedro Sula and Tegucigalpa. However, since these establishments are limited in Honduras, long-term strategies should focus on larger supermarkets with specialized fish sections in Tegucigalpa that cater to middle-income mestizo clientele groups.

Lack of demand could be addressed through in-store demonstrations, samples, and point-of-purchase consumer information. Freshness and year-round availability should be emphasized. Given the low daily volumes of tilapia purchased, these same in-store promotions should be developed for stores that currently sell tilapia to increase sales.

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