



**JAMPRO**  
TRADE & INVESTMENT JAMAICA

## MARKET PROFILE: TILAPIA

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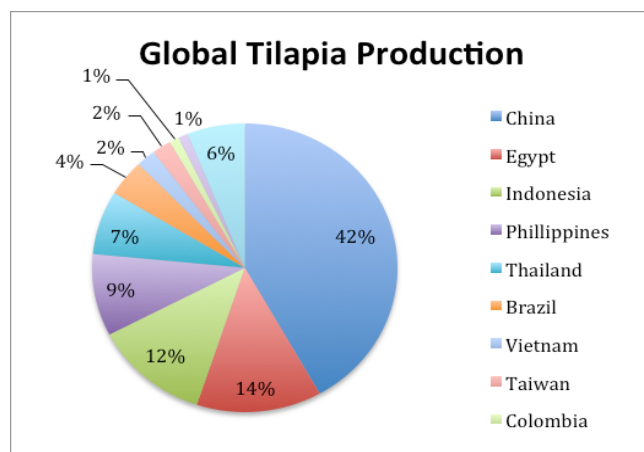
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## TILAPIA – A MAJOR BUSINESS OPPORTUNITY FOR LOCAL INVESTORS!

A spike in global demand coupled with growing consumption trends in the domestic market for Tilapia have spawned new opportunities for investors in the Jamaican Tilapia fish-farming industry. Global sales of aquaculture Tilapia were estimated US\$5.7 billion in 2010 according to figures released by the Food and Agriculture Organisation (FAO) as production of all species of Tilapia moved from US\$1.5 million tonnes in 2003 to US\$4.2 million tonnes in 2012.

- Jamaicans consume 82,400 tonnes of fish annually and over \$69 million is spent on fresh and frozen fish imports, a figure which can be significantly reduced with an increase in local Tilapia production. The local market is therefore ripe for investment given the following factors: High demand for fish in Jamaican households and in the local hotel industry
- Growing demand for Tilapia in the USA and in the wider global consumer markets.

- Growing opportunities for product diversification into fish fillets and a range of frozen and convenience products to address changing consumption patterns and buying habits.
- The opportunity to establish and participate in 'niche marketing' activities in international markets for Jamaican Tilapia. By region, Asia accounts for over 70% of world tilapia production with Africa accounting for 12% and the remaining 18% being produced primarily in the Americas. The United States is the single largest export market for tilapia, which come mainly from China.





Source: Ministry of Agriculture &amp; Fisheries

## TILAPIA – A MAJOR BUSINESS OPPORTUNITY FOR LOCAL INVESTORS

Fish remains a leading consumer item in Jamaica but the market remains under-supplied by the local fishing industry. This scenario has led to heavy reliance on imports, underscored by the fact that seafood is the third largest imported food item in recent years by Jamaica. The importance of fish consumption in the average Jamaican diet, the prevalence of high world prices for food items and the high proportion of fish imports in domestic supplies, pose a food security problem to Jamaica. This issue may be addressed with a more active aquaculture industry, tighter synergies between producers and Government agencies, and increase in capacity to compete with cheap imports from abroad through improved efficiency.

- There is an availability of lands along the Jamaican coast for additional farms (and particularly salt-water farms)
- The development of two agro-parks that will be dedicated to fish farming, offered through the Ministry of Agriculture and Fisheries
- Individual members in the sector may leverage their strengths for collaborative initiatives, such as group purchasing.

## TILAPIA PRODUCTION IN JAMAICA

While Jamaica has not contributed significantly to the global tilapia trade, tilapia farming is an activity that reached its peak in 2006, with production in excess of 7,500 tonnes, a good proportion of which was intended for exports. The original initiatives in this area are related to Government, but its main thrust continues to be associated with a single company, Jamaica Aquaculture, from as early as the 1990s.

Jamaica was a major producer of tilapia in the 1980s and 1990s, at which time there were about 50 farms with sizes ranging from two to 2,000 acres of ponds. Currently, there are about 1,500 acres being used for the farming of tilapia. The technology for freshwater fish production has improved, and farming cycles can be as short as 120 days. Aquaculture provides the best opportunity for Jamaica to increase the availability of fish for domestic consumption and export.

Fish farming occurs primarily in the south central plains of the country in the parishes of Clarendon and St. Catherine, where the soil type and water are suitable. Minor fish farming activity occurs in other parishes such as St. Elizabeth and Westmoreland in the south, and St. Mary and Portland in the northeast, as well as Trelawny in the north.



The table below demonstrates that over a three-year period from 2007 to 2009, tilapia production decreased by 10.2%, moving from 5600 MT in 2007 to 5030 MT in 2009.

### FISH PRODUCTION 2007-2009

Item	2007	2008	2009
<b>Total Marine Fish Production (Mt)</b>	11,838	10,025	13,205
<b>Total Tilapia Production (Mt)</b>	5,600	5,800	5,030
<b>Total Fish Production (Mt)</b>	17,438	15,825	18,235

There are currently about 1,500 acres being used for the farming of tilapia, most of which produce fish weighing 0.5 to 0.75 lbs sold live to higgler, usually at the farm gate. Starting with 1 gram juveniles, production may take close to a year, while commencing with 15-40 gram juveniles, farming cycles are shortened to 120-150 days. Under these conditions most farmers can run two or more production cycles per year.

## PROFITABILITY

The set-up cost for a forty-acre tilapia pond is estimated at J\$99.6 million (see table below). Like any other economic activity, profitability is an essential requirement for entrepreneurs establishing fish farming as a business. Profitability of semi-intensive tilapia culture systems in Jamaica, expressed as rate of return on investment is high and increases with the size of the farm, mainly because of economies of scale. Also, despite relatively high production costs, the cost of production per unit of product is lower since total production is also higher.

It should also be highlighted that since tilapia is a species that responds well to low quality inputs, production costs can be reduced through more intensive use of animal manures and other agro-industrial by-products as sources of fertilizer and feed. Productivity could also be improved through adaptive modernization and intensification, as well as use of alternative (renewable) energy sources.

Item	Unit	Rate/Unit (J\$)	Total	Useful Life (Yrs)
<b>EQUIPMENT</b>				
Purchase of land	40	\$920,000	\$36,800,000	
Seine net 300'x1/2"	3	\$390,000	\$1,170,000	6
Dip net	3	\$22,360	\$67,080	3
Scale	3	\$15,600	\$46,800	10
Aerators	25	\$195,000	\$4,875,000	3
Pick-up 4 wheel drive	1	\$3,900,000	\$3,900,000	5
Weed Whackers	3	\$26,000	\$78,000	5
Water Pump 6" diesel	3	\$143,000	\$429,000	10
Construct ponds (3/4 - 1) acre, including design supervision etc.	35	\$517,500	\$18,112,500	5
Plumbing and Drain Assembly	35	\$130,000	\$4,550,000	10
Drainage Canals	35	\$130,000	\$4,550,000	5
Fencing-barbwire	1	\$650,000	\$650,000	10
Electrical installations	1	\$9,100,000	\$9,100,000	20
Farm Building	1	\$6,500,000	\$6,500,000	25
Feed Bins	2	\$650,000	\$1,300,000	10
Tractor	1	\$4,550,000	\$4,550,000	15
Backup Generator	1	\$2,600,000	\$2,600,000	15
Miscellaneous tools Shovel cutlass, rope, harvest crates etc.	1	\$325,000	\$325,000	1 to 3
<b>Total</b>			<b>\$99,603,380</b>	

Operating Cost: 40 Water Acres with 35 Ponds Already in Operation

Operating Expenses		Units/Mth	Mth1	Mth2	Mth3	Mth4	Mth5	Mth6	Mth7	Total	Mth8	Mth9	Mth10	Mth11	Mth12	Total/Annum
Direct Costs																
Broad Stock Maintenance	1	17,250.00	17,250.00	17,250.00	17,250.00	17,250.00	17,250.00	17,250.00	17,250.00	120,750.00	17,250.00	17,250.00	17,250.00	17,250.00	17,250.00	207,000.00
Sex Reversal	1	5,750.00	-	-	-	-	-	-	-	5,750.00	5,750.00	-	-	-	-	11,500.00
Feed Cost	1	121,205.76	1,334,469.43	1,334,469.43	1,334,469.43	1,334,469.43	1,334,469.43	1,334,469.43	8,128,022.32	1,334,469.43	1,334,469.43	1,334,469.43	1,334,469.43	1,334,469.43	1,334,469.43	14,800,369.46
Labour (Inclusive of Feeding, Weeding, Harvesting etc.)	7	252,000.00	252,000.00	252,000.00	252,000.00	252,000.00	252,000.00	252,000.00	252,000.00	1,764,000.00	252,000.00	252,000.00	252,000.00	252,000.00	252,000.00	3,024,000.00
Fuel Charges	1	109,388.00	105,038.00	105,038.00	105,038.00	105,038.00	105,038.00	105,038.00	105,038.00	739,616.00	105,038.00	105,038.00	105,038.00	105,038.00	105,038.00	1,264,806.00
Electricity	1	435,000.00	435,000.00	435,000.00	435,000.00	435,000.00	435,000.00	435,000.00	435,000.00	3,045,000.00	435,000.00	435,000.00	435,000.00	435,000.00	435,000.00	5,220,000.00
Water Charges	27	31,590.00	31,590.00	31,590.00	31,590.00	31,590.00	31,590.00	31,590.00	31,590.00	221,130.00	31,590.00	31,590.00	31,590.00	31,590.00	31,590.00	375,080.00
Pond Water Refill/ Maintenance @ NIC rate	35	22,750.00	22,750.00	22,750.00	22,750.00	22,750.00	22,750.00	22,750.00	22,750.00	159,250.00	22,750.00	22,750.00	22,750.00	22,750.00	22,750.00	273,000.00
Maintain Farm Vehicles	2	13,200.00	13,200.00	13,200.00	13,200.00	13,200.00	13,200.00	13,200.00	13,200.00	92,400.00	13,200.00	13,200.00	13,200.00	13,200.00	13,200.00	158,400.00
Maintenance of Nets	3	10,800.00	10,800.00	10,800.00	10,800.00	10,800.00	10,800.00	10,800.00	10,800.00	75,600.00	10,800.00	10,800.00	10,800.00	10,800.00	10,800.00	126,600.00
Maintenance of Aerators	25	75,000.00	75,000.00	75,000.00	75,000.00	75,000.00	75,000.00	75,000.00	75,000.00	525,000.00	75,000.00	75,000.00	75,000.00	75,000.00	75,000.00	900,000.00
Maintenance of Generators	1	1,200.00	1,200.00	1,200.00	1,200.00	1,200.00	1,200.00	1,200.00	1,200.00	8,400.00	1,200.00	1,000.00	1,000.00	1,000.00	1,000.00	13,600.00
Maintain Electrical Equipment (Breakers, Cables, etc.)	1	12,000.00	12,000.00	12,000.00	12,000.00	12,000.00	12,000.00	12,000.00	12,000.00	84,000.00	12,000.00	12,000.00	12,000.00	12,000.00	12,000.00	144,000.00
Maintenance of Pumps	3	12,600.00	12,600.00	12,600.00	12,600.00	12,600.00	12,600.00	12,600.00	12,600.00	88,200.00	12,600.00	12,600.00	12,600.00	12,600.00	12,600.00	151,200.00
Maintenance of Pump Hose	3	3,060.00	3,060.00	3,060.00	3,060.00	3,060.00	3,060.00	3,060.00	3,060.00	21,420.00	3,060.00	3,060.00	3,060.00	3,060.00	3,060.00	36,720.00
Road Maintenance	1	130,000.00	-	-	-	-	-	-	-	130,000.00	-	-	-	-	-	130,000.00
Property Taxes	1	800,000.00	-	-	-	-	-	-	-	800,000.00	-	-	-	-	-	800,000.00
Pond Renovation	1	435,000.00	-	-	-	-	-	-	-	435,000.00	-	-	-	-	-	1,305,000.00
Total Direct Cost		2,487,793.76	2,325,957.43	2,325,957.43	2,325,957.43	2,325,957.43	2,325,957.43	2,325,957.43	2,325,957.43	16,878,538.32	2,331,707.43	2,760,757.43	2,325,757.43	2,325,757.43	2,325,757.43	28,948,275.46
Indirect Costs																
Marketing	1	166,666.67	166,666.67	166,666.67	166,666.67	166,666.67	166,666.67	166,666.67	166,666.67	1,166,666.67	166,666.67	166,666.67	166,666.67	166,666.67	166,666.67	2,000,000.00
Management	1	180,000.00	360,000.00	360,000.00	360,000.00	360,000.00	360,000.00	360,000.00	360,000.00	2,340,000.00	360,000.00	360,000.00	360,000.00	360,000.00	360,000.00	4,140,000.00
Security	1	110,624.91	110,624.91	110,624.91	110,624.91	110,624.91	110,624.91	110,624.91	110,624.91	774,374.37	110,624.91	110,624.91	110,624.91	110,624.91	110,624.91	1,327,688.92
Interest Payment	1	597,620.28	594,532.03	594,532.03	594,532.03	591,420.62	588,285.87	585,127.62	581,995.67	4,133,464.12	575,510.01	572,255.94	568,977.45	565,674.38	562,348.54	6,978,228.44
Other Administrative Costs	1	75,518.34	75,518.34	75,518.34	75,518.34	75,518.34	75,518.34	75,518.34	75,518.34	528,628.38	75,518.34	75,518.34	75,518.34	75,518.34	75,518.34	906,220.08
Total Indirect Cost		1,130,430.20	1,307,241.95	1,307,241.95	1,304,280.54	1,301,095.79	1,297,937.54	1,294,755.59	1,294,755.59	8,943,133.54	1,288,319.93	1,285,065.86	1,281,787.37	1,278,484.30	1,275,156.46	15,351,947.44
Total Costs		3,618,223.96	3,633,299.37	3,633,299.37	3,630,187.96	3,623,894.96	3,620,713.01	25,821,671.86	3,620,027.35	4,045,823.28	3,607,544.79	3,604,241.72	3,600,913.88	44,300,222.90	44,300,222.90	
First harvest after seven months and associated expenses.																
Current wholesale price/ lbs of fish																
Gross Revenue for 7 months																
Net Returns for the 7 month period																
\$25,200,000.00																
(\$21,671.86)																

NOTES:

1. Projection yield if at least 20 pounds were hauled @ 7000 lbs each over seven months
2. Feed costs based on FCR 1.2:75 to achieve yield of \$140,000 lbs excluding feed for fries at the initial phase
3. Current wholesale price/lb of fish is \$180
4. Marketing cost estimated at \$32M per year
5. One manager hired for general and technical oversight
6. Security cost calculated at 3% of total operating cost
7. Loan calculated at 9% interest over 10 years on 80% of setup cost
8. Other Administrative cost includes payment of administrative staff and office expenses calculated at 2% of total cost