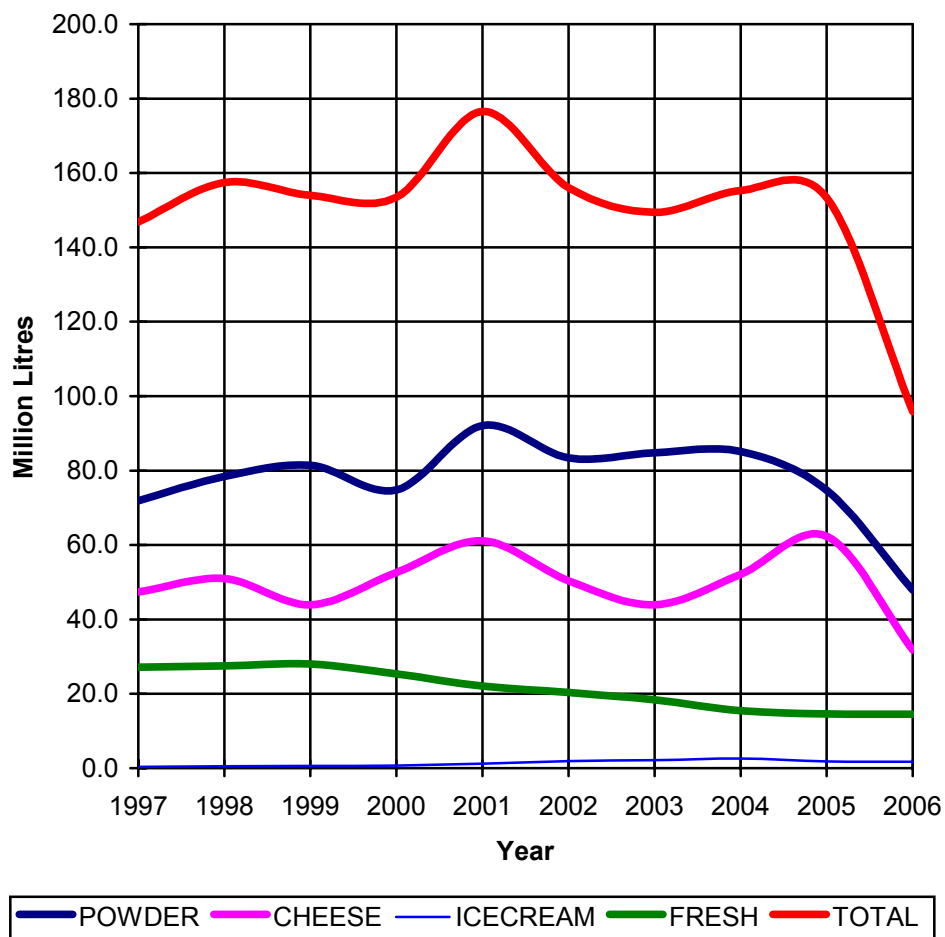


# Jamaica Dairy Development Board

# DAIRY

## *Facts & Figures* *2006-07*

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## Foreword

The radically changed trade and economic paradigm of the past two to three years, has placed the issue of national food security as an urgent priority for public policy. The increasing diversion of traditional food grains to bio-fuel production, in tandem with the persistent demand-supply gap, threatens both the availability and affordability of traditional basic foods such as milk and dairy products. Jamaica's historically heavy dependence on 'cheap' imports for satisfying our requirements for animal protein, has exposed our vulnerability as it relates to the nutritional assurance of our people.

The new Government of Jamaica is therefore committed to the redevelopment of the local dairy sector as part of its policy of enhancing national food security.

We recognize that the sustained development of the sector must be based upon the application of improved technology, at both farm and factory, in order to guarantee affordability. We are also cognizant of the need to implement organizational strategies to protect his livelihood, by ensuring the viable participation of the small farmer, the traditional bedrock of local dairy farming, while simultaneously providing the environment to attract non-traditional entrepreneurial initiative.

The Government is therefore committed to partnering in the revitalization of the sector as enabler, not only through its historical role of technology and information generator and disseminator, but also more directly as catalyst for investment.

I wish to congratulate the Jamaica Dairy Development Board for its sustained effort in providing, through the annual publication of *Dairy Facts and Figures* and other information resources, the analytical framework that will no doubt be of great value to the effort of reshaping the local dairy sector for sustained contribution to national development.

Christopher Tufton, MP  
Minister of Agriculture

## **Preface**

The eighth volume of *Dairy Facts and Figures* coincides with what is clearly the onset of a period of unfolding opportunities for the Jamaican dairy sector.

The macro-economic upheavals at the international level, particularly during the past year demands decisive action to place local milk production on a path to long-term sustainability in order to contribute meaningfully to enhanced national food security.

This volume offers an analysis of the current state of the local dairy sector and restates a few policy and strategic approaches which are considered critical to its revitalization.

We apologize unreservedly for the delay in the publication of this volume. In order to ensure its usual standard of comprehensiveness, we took the decision to defer publication pending the availability of import data, a critical component of the analysis of sector performance.

The Board acknowledges the continuing assistance of STATIN, the Data Bank of the Ministry of Agriculture and Lands, Trade Board Ltd., The Beef and Dairy Producers Association of Jamaica, The Jamaica Dairy Farmers' Federation, The Jamaica Livestock Association Ltd., Nestle Jamaica Ltd. and other organizations and agencies which have contributed to the compilation of this publication.

*Paul Jennings*, PhD  
Chief Executive Officer  
January 14, 2008

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## **1.0 JAMAICA DAIRY DEVELOPMENT BOARD**

The Jamaica Dairy Development Board has completed eight years of operation since its inception in September 1999. Established by Cabinet Resolution No. 13/199 of April 19, 1999, the Board was given the mandate of promoting, through policy analysis and industry review, the transformation of the local dairy sector into an efficient, sustainable component of the Jamaican economy. This mandate was developed in response to the identified structural and institutional deficiencies which exacerbated the vulnerability of the sector to a radically changed economic and trading environment.

Without the initial cushioning necessitated by a radical switch in economic policy, the sector, notwithstanding the establishment of the Dairy Board, has continued to experience sustained attrition in response to trade liberalization. Without adequate safeguard mechanisms to cushion the local producer against the influx of imports of milk solids heavily subsidised at origin, the vast majority of small- and medium-scale were forced out of the market with the result that milk production declined to a 20-year low of 14.51 million litres in 2006.

The upheavals in the international dairy products market, triggered primarily by the removal of export rebates on powdered milk within the EU during the summer of 2006, has created a platform for the revitalization of the local dairy sector in order to restore its contribution to enhanced national food security.

During calendar 2006, European milk powder prices escalated by 48 percent. Given the demand/supply imbalances driven by the Chinese consumer revolution, as well as the increases in feedstock prices and the persistent fiscal deficit policy of the US administration, the volatility of the world dairy market of 2006 is expected to intensify and continue well into the medium term. This holds grave implications for nutritional assurance for a significant proportion of the Jamaican population, children, nursing and pregnant mothers being particularly vulnerable.

<http://www.moa.gov.jm>

Out of recognition of the inescapable imperative on public policy for facilitation of the expansion of the local dairy sector, the Dairy Board during fiscal 2006, continued to augment the information base critical to sustained industry development. To this end the major outputs of the Board included:

- Publication of the 7<sup>th</sup> volume of Dairy Facts and Figures
- Report of the 2005 Annual Cost of Production survey
- Analysis of the Efficiencies of Milk Production on Dairy farms - 2005
- Draft Cabinet Submission for the Revitalization of the Cattle Sector, in collaboration with the Beef and Dairy Producers Association of Jamaica
- *A Perspective on the Market Potential of the Jamaica Hope* – Paper presented to Annual Conference 2006, the Jamaican Society for Agricultural Sciences
- *Revitalization of the Jamaica Hope: A Consortium Approach to the Implementation of a National Progeny Testing Programme*. Discussion paper establishing framework for initiating Consortium.
- *A 20/20 Perspective on the Jamaican Cattle Sector*. Paper recommending policy and strategic initiatives for the medium term development of the Jamaican cattle sector.
- *Revitalization of the Jamaican Dairy sector: Evaluation of the Feasibility of Business Models for Intensive Dairy Production*. Paper prepared for presentation at Annual Conference 2007, Jamaican Society for Agricultural Sciences.

### **1.1 Implications of a Volatile International Market on Jamaica's Food Security**

Data from the annual *Survey of Living Conditions* have shown that, with respect to their consumption of milk and dairy products, the poorest 40 percent of the Jamaican population may be considered nutritionally marginalized. The data for 2006 (STATIN, JSLC) indicate average per capita

expenditure of \$2090.00 for the poorest 40 percent of the population, equivalent to approximately 26.9 litres fresh milk at December 2006 retail prices. This compares with a WHO recommended minimum of 73 litres per annum (200 ml per day).

The volatility of the international dairy markets has negated any intended benefits of a soft tariff regime, on consumption by the poor; milk powder export prices having nearly doubled between December 2005 and March 2007. Concomitantly, sharp increases in input costs have driven serial increases in farm-gate and retail prices of locally produced fresh milk, while the high cost of capital continues to pose a major hurdle to new investments in the dairy sector. These impair the prospects of local production being able to compensate for anticipated shortfalls in the supply of imports within the near term.

Given the real prospect of this market instability persisting into the medium term and the implications for national food security, there is an urgent imperative for a review of public policy with respect to the dairy sector. Strategies will have to be developed to reintegrate the small producer into the sector, in order to restore the livelihoods of a significant segment of the rural population while enhancing food security. These, however, will require a corporate approach which harnesses the well established competences of the traditional small dairy farmer within a framework that confers the economies of scale essential to high resource efficiencies and international competitiveness. The distinct geographic character of small farmer milk production in Jamaica lends itself to the establishment of cluster farming or 'cow parks' as currently being championed by the World Bank in countries such as China. In this regard it is instructive that a recent study by the Dairy Board has indicated that given the current financial and economic environment, new investments in dairy farming are only likely to be viable if sized above 450 milkers.

## **2.0 STATUS OF THE DAIRY SECTOR**

### **2.1 Overview**

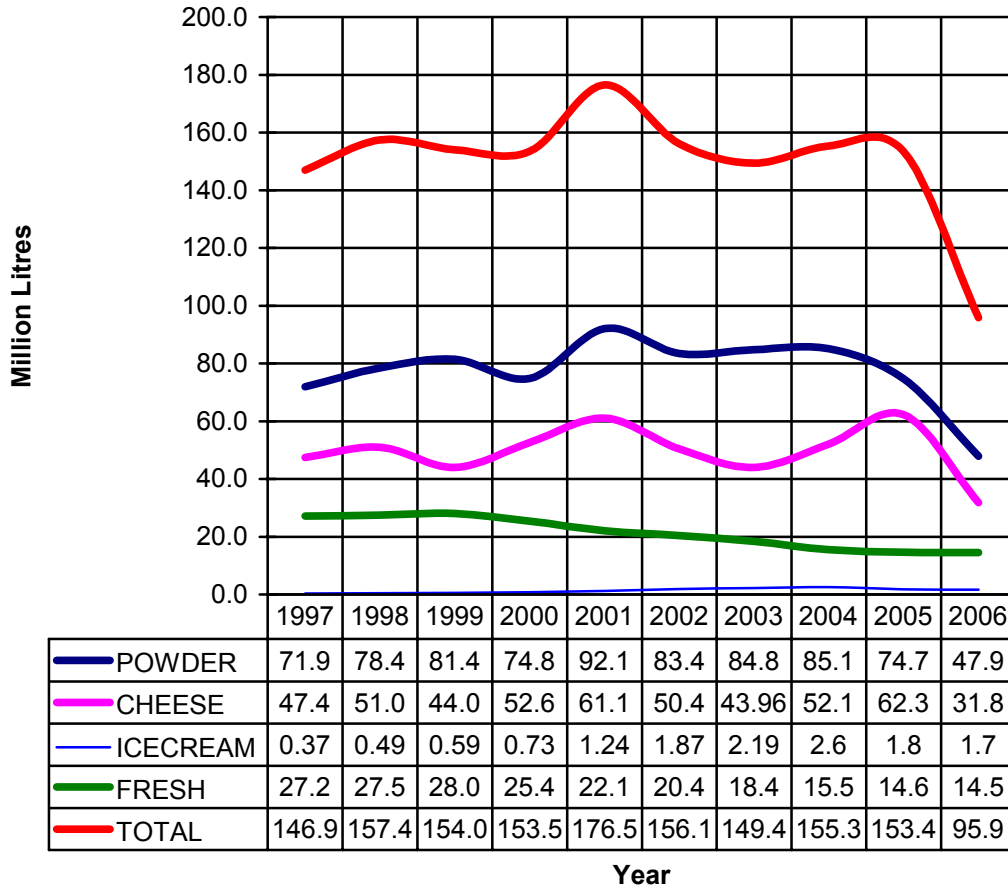
In the absence of any adverse climatic events and the relatively even rainfall distribution throughout the year, milk production in 2006 remained fairly stable in comparison to the previous year; formally traded milk reported at 14.51 million litres compared to 14.6 million in 2005.

The entry of the *MUSSON* conglomerate into the sector, through their April 2006 acquisition of the Serge Island group, also proved a major stabilizing factor, not only through the injection of some well needed confidence in the future of the sector, but more directly through their intervention in purchasing several hundred productive females from three large herds which opted to liquidate their herds, thus retaining these animals in the national milking herd.

At the international level, the confluence of the elimination of European export rebates on powdered milk with the world demand: supply imbalance with respect to milk and dairy products, posed a significant threat to local nutritional adequacy, as levels of imports nose-dived in response to increased export prices.

In terms of fluid equivalents, the reduction in total imports of milk solids resulted in a 37-per cent decline in aggregate consumption compared with the average of the preceding five years (Figure 1). This represented a fall in indicative per capita consumption to an unprecedented low of 99.2 ml per day; less than one-half the WHO recommended allowance.

**Figure 1: Sources Of Milk Solids**



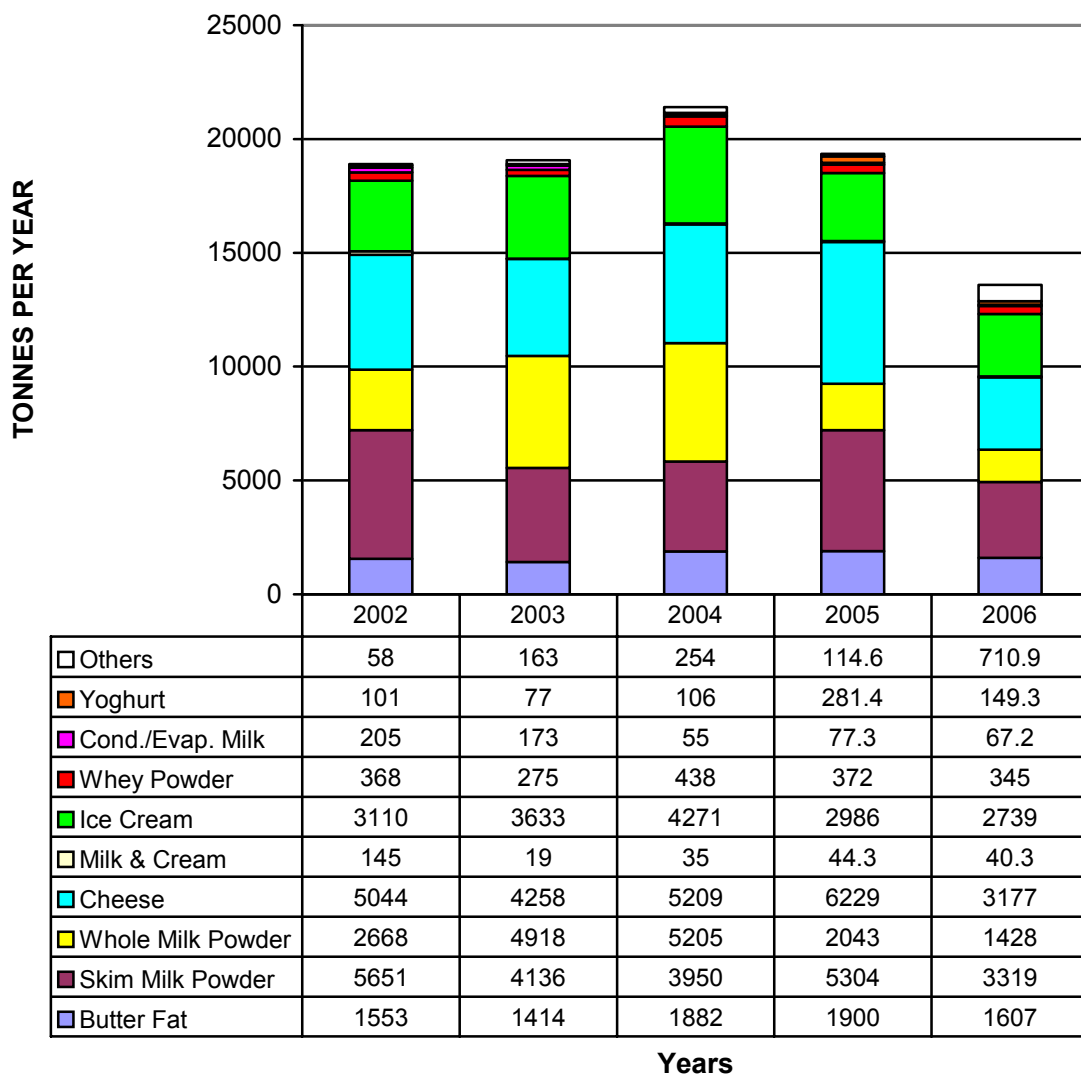
The significantly altered macro-economic environment, with respect to the international dairy market, is expected to persist well into the medium term. This presents significant opportunities for new investments in the local production of milk. The extent to which these materialise and are sustained, will be influenced by the creation of a supportive policy environment and the adoption of production technologies and marketing strategies aimed at enhancing affordability. This will require a reversal in production and marketing strategies, which over much of the past decade have positioned fresh milk as a niche product, to one which seeks to exploit a mass market requiring a diverse range of dairy products at affordable prices.

## 2.2 Imports of Milk Solids

Total imports of milk solids in 2006 fell to 13,584 tons, 29.8 percent below the volume imported in 2005 (Fig. 2). Expenditure on dairy imports declined, correspondingly, by 24.6 percent to US\$39.67 million (Table 1).

The most significant volume declines were recorded for cheese (-49%); skimmed milk powder (-37.4%) and whole milk powder (-30%).

**Figure 2: Dairy Product Imports 2002-2006**



**Table 1. Annual Imports of Milk Solids by Value (US\$'000) 2002-2006**

<b>Product</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
Milk & Cream	282.44	1.64	52.14	104.39	81.64
Skim Milk Powder	10,048.60	7,288.68	8,368.39	12,561.85	7,724.38
Whole Milk Powder	4,480.20	9,784.04	10,975.58	4,926.71	3,947.31
Cond./Evap. Milk	240.00	83.89	2.27	127.27	142.38
Whey Powder	269.40	412.95	638.12	673.11	647.30
Ice Cream	5,455.63	5,527.86	5,774.27	5,559.96	6,062.73
Yoghurt	204.97	273.47	236.12	497.16	549.7
Cheeses	14,881.63	12,458.01	16,191.12	22,196.43	15,094.12
Butter Fat	2,713.62	2,765.40	4,893.11	5,531.95	3,689.56
Others	348.62	551.12	414.51	464.78	1,734.26
<b>Total</b>	<b>38,920.0</b>	<b>39,147.0</b>	<b>47,545.6</b>	<b>52,643.6</b>	<b>39,673.4</b>

Source: STATIN

The removal of export rebates on milk powder exports within the European Union, during the summer of 2006, spurred an escalation in prices of skimmed and whole milk powder by 40 and 38 percent respectively, based on year-end prices for 2006 cf. 2005. This impacted on the availability of cheese, as manufacturers opportunistically diverted milk away from cheese to milk powder production. The continuance of the European rebates on solids other than powdered milk, however, dampened the increases in world cheddar prices, New Zealand export prices, in fact, closing 2006 at US\$2900 per ton, compared to a corresponding price of US\$3000 for 2005.

The impact of international price changes (FOB) on the local landed prices of milk solids is shown in Table 2, which summarises the changes in imputed CIF, based upon prices declared at Customs.

**Table 2. Changes in Imputed CIF of SMP, WMP and cheese 2004-05**

	Imputed CIF (US\$/t)		Change in Imputed CIF (%)	Change in reported FOB*	Change in import volume
	2006	2005			
<b>Skimmed Milk powder</b>	2327	2368	-1.7	+40.0	-37.4
<b>Whole Milk Powder</b>	2764	2412	+14.6	+37.8	-30.1
<b>Ice Cream</b>	2213	1862	+18.9	n/a	-8.3
<b>Butter (fats)</b>	2296	2911	-21.1	-1.2	-15.4
<b>Cheese</b>	4750	3563	+33.3	-3.3	-49.0

\*Source: USDA-AMS

The apparent anomaly with respect to skimmed milk powder is not readily explained. Taken together, however, the imputed CIF on powdered milk increased by 6.1%, spurring a 35.4 percent reduction in cumulative import volume. With respect to cheese, the difference in CIF vs. reported FOB may be reflective of the escalation in spot market prices as much of the New Zealand cheddar production are tied up in forward contracts.

### 2.3 Trends in International Market for Milk Solids

Production of milk by the world's leading producers increased to 425.1 million tons in 2006, a 1.6 percent growth over the previous year. This represented an acceleration over the average growth of below one percent during the previous four years (Table 3).

**Table 3. World Milk Production, Consumption and Exports 2002-2006**

	2002	2003	2004	2005	2006
<b>Fluid Milk Production/Consumption (Million tons)</b>					
Production	402.3	406.4	412.3	418.2	425.1
Consumption - World	155.8	158.8	163.7	167.3	170.4
Consumption - China	5.7	7.7	10.3	12.5	14.8
<b>Exports (Million tons)</b>					
Cheese	1.157	1.181	1.241	1.250	1.167
Butter	0.747	0.865	0.905	0.793	0.742
Skimmed Milk Powder	1.046	1.172	1.165	1.012	1.052
Whole Milk Powder	1.484	1.477	1.663	1.545	1.541
<b>Total Exports (Fluid Equivalents)</b>	40.93	43.45	45.76	42.33	41.51
Powder Imports - China (000' mt)	112	142	152	108	150

Source: USDA-FAS, Dec. 2006

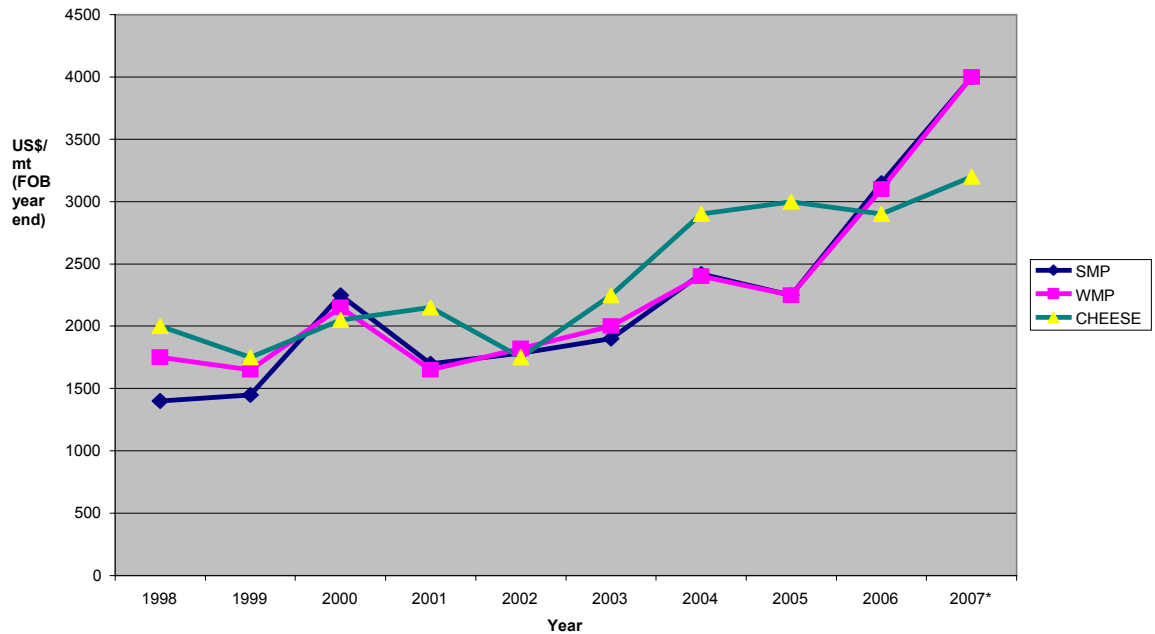
Some of the major dynamics which have influenced world trade in dairy products over the past five years are:

- Growth in world consumption of fluid milk has outstripped production by a factor of 1.7;
- Compared to a cumulative five year growth in World fluid milk consumption of 9.3%, consumption in China increased by 160% between 2002 and 2006;
- Exports of the major milk solids represented on average, 10.3 percent of total milk production ;
- Milk powder imports by China grew by 34% during the past five years and in 2006, accounted for 14.2 per cent of world exports.

The resulting supply/demand imbalance over the past five years has resulted in an upward push in the international prices of dairy products since 2002 (Figure 3).

The elimination of export subsidies on skimmed milk powder by the EU in mid-2006, triggered a near-exponential increase in world prices for powdered milk compared to closing prices for 2005 (Fig. 4); FOB price of European skimmed milk powder surging to approximately US\$3150 at year end and further to US\$4200 per metric ton by the end of March 2007 (USDA-AMS).

Fig. 3 Trends in International Prices of Milk Solids - 1998-2007



The spiralling in the price of powdered milk is expected to continue into the medium term and in fact widen to include the wider range of traded milk solids given the following:

- The impact of the concomitant increases in grain prices, given increasing diversion to bio-fuels;
- The commitment by the EU to the near-term withdrawal of export subsidies on all dairy exports;
- The continuing lag in growth of world production behind consumption.

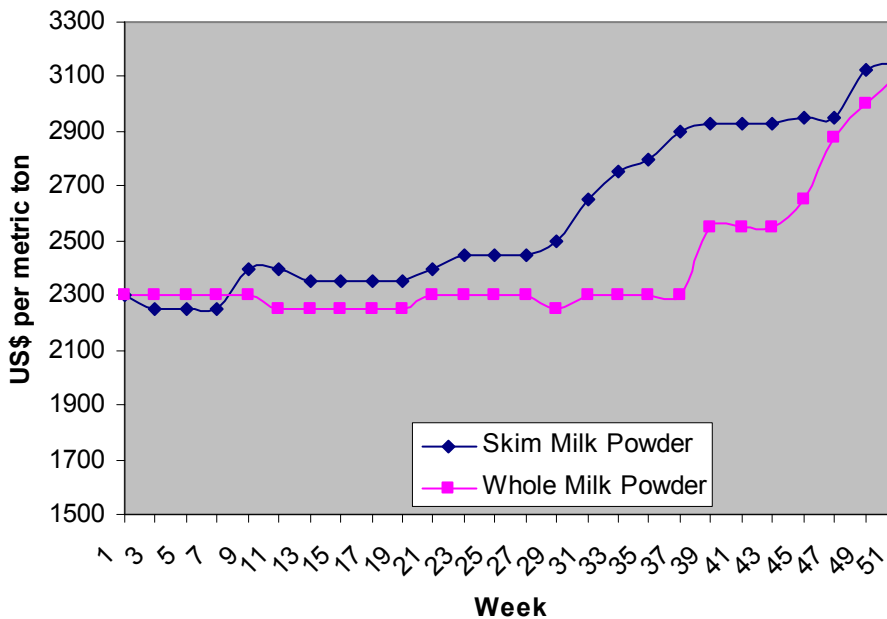
The anticipated protracted volatility in the international dairy products market, while presenting opportunities for the local dairy farm sector, also intimates a potential nutritional crisis. Given the inherently low prolificacy of cattle, the response time for the local sector to compensate for the anticipated reduction in imports, will be unavoidably protracted, in the absence of substantial imports of cattle. The degrees of freedom with respect to live cattle imports are extremely limited, given the BSE status of the United States and Canada, the traditional sources of cattle genetics.

In the medium term, a *Social Safety Net* approach targeted at mitigating the situation with respect to the most nutritionally vulnerable segments of the population, offers a feasible strategy. In this regard the National School Feeding programme presents a means of direct targeting. Given an enrolment above 550,000 students in the Public educational system, a nutrition amelioration programme targeted at the most vulnerable 40 - 50 percent of the school population would require an annual supply of approximately 8 -10 million litres of milk, well within the short to medium term capability of the local sector. Additionally, the National School Feeding Programme offers the option to absorb much of the incremental beef from a resurgent dairy sector, thus enhancing its viability.

It is suggested that an immediate Public commitment to such a strategy would provide an additional fillip to existing and potential investors to enter into a sector with clear, positive medium to long term prospects.

With respect to financing a rationalized national School Feeding programme, consideration might be given to a reform of the existing Tariff regime to mitigate price increases to the consumer, while requiring of the import trade, a direct contribution to the redevelopment of the local dairy sector through the imposition of a Dairy Development Levy.

**Figure 4. International Milk Powder Prices (F.O.B. 2006)**



## 2.4 Consumer Expenditure on Milk Solids

*Per capita* expenditure on milk solids in 2006 increased in nominal value by 5 per cent over the previous year; averaging \$3657 (Table 4). With an annual rate of inflation of 8.6% for calendar 2006, this translates to a reduction in real expenditure of approximately 3.3 per cent.

The significant declines in real expenditures (Table 5) indicate the declines in consumption of powdered milk, butter, fresh milk and *other dairy products* including yoghurt. The pattern of declines suggests that the limits to the elasticity of demand for products such as powdered milk are being approached. This provides justification for immediate policy initiatives to forestall an approaching nutritional crisis.

**Table 4: Mean Per Capita Expenditure on Selected Dairy Products –2006 (J\$)**

<b>Product</b>	<b>Jamaica</b> (N=9495)	<b>KMA</b> (N=3069)	<b>Other Towns</b> (N=1925)	<b>Rural Areas</b> (N=4501)
1. Liquid Milk inc. flavoured	347.8	511.0	390.4	218.4
2. Condensed/Evap. Milk	958.9	960.4	1029.8	927.6
3. Food Drink	946.0	1280.5	817.6	772.8
4. Powdered Milk	323.8	244.6	314.5	381.7
5. Butter or Margarine	227.2	221.8	261.0	216.5
6. Cheese	411.3	512.6	425.2	336.3
7. Other Dairy Products (yoghurt, ice cream)	442.0	548.2	467.4	358.8
<b>Total</b>	<b>3657.0</b>	<b>4279.0</b>	<b>3706.0</b>	<b>3212.0</b>

N= number of household members  
Source: STATIN SLC (2006).

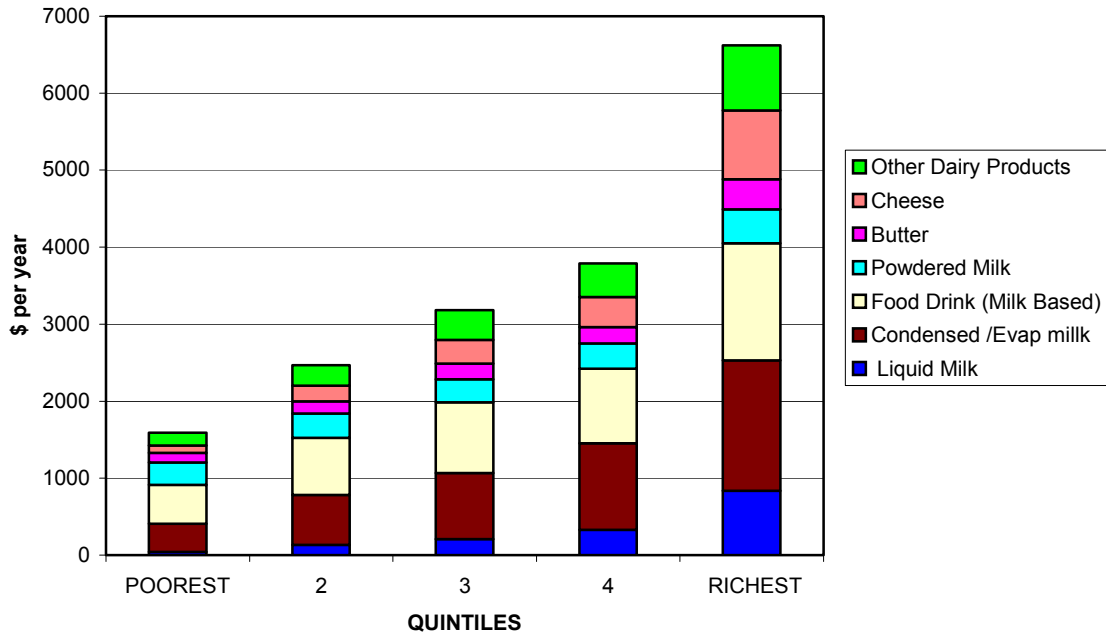
**Table 5. Changes in Consumer Demand for Milk Solids (2006 vs. 2005)**

<b>Product</b>	<b>2005</b>	<b>2006</b>	<b>Change in Real Expenditure</b>
Liquid Milk	348.3	347.8	-8.05
Cond/Evap.	869.9	958.9	+1.5
Food Drink	872.3	946.0	-0.01
Powdered Milk	397.5	323.8	-25.0
Butter	190.4	227.2	-9.88
Cheese	358.7	411.3	+5.6
Other (incl. Yoghurt, Ice cream)	446.1	442.0	-8.76
<b>Total</b>	<b>3483.1</b>	<b>3657.0</b>	<b>-3.32</b>

Predictably, given the sharp increases in prices of milk solids, the gap in per capita expenditure between the wealthiest and the poorest quintiles (\$6622 vs. \$1591), widened to a factor of 4.4 in 2006 compared to 3.4 in 2005. The widening gap between the wealthiest quintile and all others forebodes an imminent crisis of affordability with respect to dairy products

(Figure 5). Aggregate *per capita* expenditure on milk products, by the poorest 40 percent of the population, at \$2090, was equivalent to the purchase of 19.6 litres of fresh milk, a 14.6 percentage fall compared to the previous year.

**Figure 5:** Mean Annual Per Capita Expenditure on Dairy Products by Wealth Groups - 2006



The realistic expectation that these price trends will persist, speaks to the need for a shift away from directing subsidies at importers, via tariff concessions, to strategies which directly target the most nutritionally vulnerable segments of the population. A rationalised National School Feeding Programme presents, perhaps, the most cost-effective option. The expansion of the Basic Schools Milk initiative of the Jamaica Dairy Farmers' Federation (under the aegis of the CHASE Fund), to the wider Public Education system, takes on a clear urgency in light of the nutritional vulnerability of a significant proportion of the Jamaican population - and more so its children - implicit in the foregoing.

Based on production and import data for 2006, daily *per capita* consumption of dairy products, on the basis of fluid equivalents, was approximately 100 millilitres compared to a WHO recommended daily allowance of 200 ml.

## 2.5 Value of the Industry

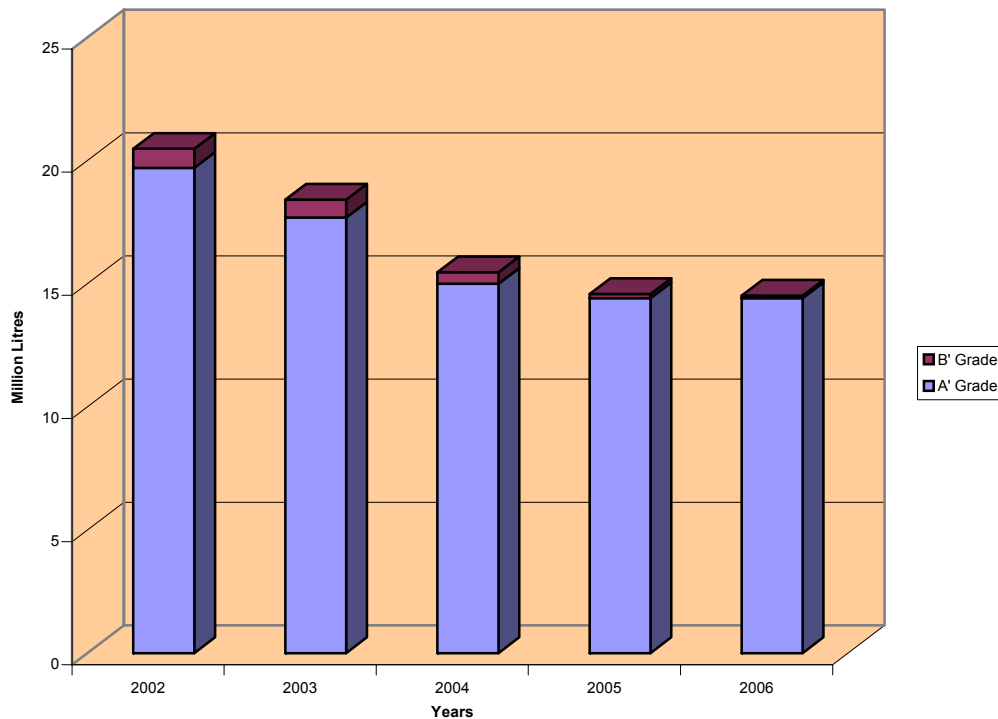
Based on the reported *per capita* expenditure of \$3657, a population estimate of 2.674 million, and adjusting for an estimated 5.9% additional spending on 'meals away from home', (PIOJ/STATIN, 2006), turnover by the dairy industry in 2006 is estimated at approximately \$10.35 billion.

The current, unaccustomed, favourable competitive position of locally produced milk, presents the opportunity for a streamlining of the local sector for sustained competitive advantage.

## 2.6 Local Milk Production

Milk production remained essentially stable over the past two years, production in 2006 at 14.51 million, only 0.6 percent below the previous year (Figure 6).

Figure 6. LOCAL MILK PRODUCTION (million litres)



As was the case in the previous year, processors attempted to stimulate increased production while minimizing the impact of rising farm gate prices on consumer demand. Thus while farm gate prices increased by 14.9 percent to an average \$26.00 per litre, retail prices, on average, grew by only 6.8 percent to \$72.81 per litre (STATIN, CPI 2006). The farm gate: retail price margin, encouragingly, narrowed to 1.8 compared to 2.1 in 2005.

Deliveries of B-grade milk fell a further 37.5 percent to 105,587 litres in 2006. This is indicative of the extent to which market access has been denied to the small farmer; purchases of B-grade milk having fallen seven-fold, over the five year period ending 2006. The restoration of the opportunity for wealth creation to the small dairy farmer will require the introduction of organizational models, such as clusters, which will confer the advantages of scale economies and significantly raise production efficiencies by reducing input and logistical costs.

## **3.0 COST OF PRODUCTION SURVEY 2006**

### **3.1 Summary of Findings**

Average cost of producing milk in Jamaica during calendar 2006 was estimated from a survey of 17 farms during the period January to March 2006.

The contribution margin model was retained for the analysis of data from the surveys as variable cost provides the most rigorous basis for comparing farms of widely ranging sizes, complexity and accounting structures French et al (2001).

Output per hectare on local dairy farms remained essentially constant at 5646 litres per hectare compared to 5698 in 2005. This, however, masks a 28-percentage decline in cow productivity as mean stocking rate on reporting farms increased to 3.35 compared to 2.43 cows per hectare in 2005.

The survey revealed an average contribution margin of 8.8%; mean variable cost estimated at J\$23.70 per litre compared to an average farm-gate price of \$26.00. Irrigated farms reported a 36% advantage in production cost (\$20.25/L) above that of non-irrigated farms.

As the cost of inputs continues to escalate, farmers will need to find the delicate balance between high cost inputs, in order to regain optimal yield levels while retaining margins. Public policy will need to be more focused toward creating an environment which will facilitate local farmers sustainably exploiting the opportunities provided by a volatile international dairy products market.

Simultaneously, producers will need to give greater focus to creating sustained competitive advantage through product differentiation, any current cost advantages are likely to be transient given the expectation of continued increases in grain, fertilizer and energy costs.

Relevant tables are attached for information.

**Table 6: Comparison of Mean Stocking Rates and Production per hectare among Farm Sizes**

<b>Category</b>	<b>Stocking Rate (cows/ha)</b>	<b>Production (L/ha)</b>
Small Non-Irrigated	0.5	502
Medium Non-Irrigated	1.62	3,428
Medium Irrigated	4.80	8,379
Large Non-Irrigated	1.72	3,572
Large Irrigated	8.10	12,350
<b>Overall mean</b>	<b>3.35</b>	<b>5,646</b>

**Table 7: Comparison of Local and International Costs of Producing Milk**

<b>Category</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
AVC Jamaica (J\$) (US\$)	17.41 0.36	17.02 0.35	17.05 0.29	19.13 0.31	22.09 0.35	23.70 0.36
Farm Gate. (J\$) (US\$)	22.14 0.46	18.00 0.37	18.00 0.31	20.00 0.33	22.63 0.36	26.00 0.39
AVC USA (US\$)			0.22	0.23	N/A	0.26
Farm Gate USA (US\$)			0.45	0.45	0.34	0.29
Retail Price Ja. (J\$) (US\$) Mark-up (%)			68.00 1.17 277.78	71.37 1.16 256.85	76.00 1.20 235.84	81.00 1.23 215.40
Retail Price USA. (US\$) Mark-up (%)			0.81 80	0.90 100	0.90 100	0.81 176.6
AVC NZ (US\$)	0.12- 0.15	0.12- 0.15	0.15- 0.18	0.15- 0.18	N/A	0.14

**Table 8: Comparison of Average Direct Costs over the Past 7 years on Organized Farms**

<b>Items</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
AVC. (J\$)	15.91	17.41	17.02	16.05	19.13	22.32	23.70
Av Farm Gate Price (J\$)	22.14	22.14	18.00	20.00	22.00	24.00	26.00
AVC Ja. (US\$)	0.34	0.36	0.35	0.29	0.31	0.35	0.39
Irrigated Farms	15.36	21.31	18.33	17.42	25.51	18.42	20.25
Non-irrigated Farms	18.30	18.83	17.23	16.04	19.63	25.90	27.66
Organized Margin (%)	28	21	6	11	4.5	-3.0	11

**Table 9. Changes in proportion of variable cost due to the various input categories**

<b>Category</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>
Feed	32.0	38.0	39.0	39.0	29.9
Utilities	4.7	7.0	7.0	7.0	6.5
Labour	26.3	21.0	13.0	13.0	24.3
Vet & Med	2.8	4.0	3.0	3.0	3.4
Pastures Mtnc. & Fertilizer	5.2	5.0	4.0	4.0	5.4

# **ABSTRACTS/SUMMARIES**

# A 20/20 PERSPECTIVE ON THE JAMAICAN CATTLE INDUSTRY

A Report Prepared to Mark the Inaugural Annual General Meeting  
of  
The Beef and Dairy Cattle Producers' Association of Jamaica

WINDALCO Sports Complex  
West Indies Alumina Company,  
Kirkvine, Manchester, JAMAICA

Wednesday, July 18, 2007

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## Executive Summary

The report delineates a situational analysis of the current state of the cattle industry from the perspective of the local and pervasive international environment. Having analyzed these environmental constraints, the study applies the framework presented by the key strategic objectives earlier identified by sector participants, at a Stakeholders Conference/Workshop of September 15-16, 2005 held at Breezes Runaway Bay. The Conference/Workshop convened by the Jamaica Livestock Association Ltd. afforded over 70 stakeholders a forum to examine and agree on strategies for the sustained amelioration of the sector, following the findings of an in-depth study of beef and dairy production in Jamaica conducted between May and July 2005.

The three key strategic objectives critical to the redevelopment of a cattle sector severely weakened by its un-preparedness for the adoption of a policy of market-determined economic development were identified as:

- 1. Realignment of the value-chain to ensure greater equity to all industry participants;**
- 2. Increasing the international competitiveness of local beef and milk production;**
- 3. Attracting youth and women to ensure continuity.**

These strategic objectives were identified as critical to overcoming the severe limitations imposed by a highly fragmented industry chain, low levels of production efficiency on farm and the under-representation of women and youth, within a policy framework which offered little protection against the trade distorting effects of imports of cattle products heavily subsidized at origin.

The situational analysis contained herein, identified the even greater intensified threats to the local sector and to national food security arising from:

- The exponential increases in the international prices of imported milk solids and beef over the past two to three years;
- Severe erosion of national food self-sufficiency in beef and milk production to the extent that local beef and milk production have declined to post-liberalization lows of 6.0 million kg and 14.5 million litres respectively in 2006.
- Unacceptably low share of the consumer dollar by local cattle farmers at 5.3 percent of a \$22 billion market;
- Resistance to local beef by the fast food trade, the traditional largest purchaser, occasioned by an influx of beef trimmings, with questionable national economic benefit given the relative cost-competitiveness of local beef.

- The spiralling cost of concentrate feeds, occasioned by the unprecedented surges in international grain prices, resulting from the increasing diversion of corn to bio-fuel production in the United States.

The analysis, however, has also highlighted a number of potential opportunities arising from the current volatility of the international market and the unsatisfied local market for fresh milk and beef which has driven serial increases in farm-gate prices of these commodities. These include:

- The likelihood of a protracted period of price instability at the international market place, will stimulate increased local demand and provide the fillip for the sustainable expansion of local production given a more pro-active public-policy framework with a focus on correcting the inherent defects of *laissez faire* market determined economic policies;
- The potential for developing an export-driven beef sector, exploiting the opportunities created by a rapidly expanding tourism trade and Jamaica's accession to the CARICOM Single Market and Economy;
- The unsatisfied demand for tropical cattle genetics, particularly from South and South-east Asia arising from the incidence of "Mad-cow" disease in North America, market leaders up to 2002.

Arguably the greatest opportunity presented by the current volatile behaviour at the international market is the opportunity to restructure the local cattle sector to invest it once again with the capacity to contribute, on a sustained basis, to national food security, increased wealth creation while providing and protecting the livelihood of a significant sub-population, primarily of small farmers. These farmers have experienced severe wealth depletion due to the forced attrition undergone by the sector as a result of the untrammelled ingress of heavily subsidized imports, from countries which view the protection of the livelihood of their own farmers, as a public policy imperative.

The sector has the distinct potential to contribute to near-full self-sufficiency in beef production and approximately 30 percent of projected requirements for milk and dairy products over the medium term (**to 2020**). However, the attainment of these targets require, principally, an activist state working in concert with the Beef and Dairy Producers' Association of Jamaica, which, since its incorporation in November 2005, has demonstrated, with limited available resources, the knowledge-driven approach critical to effective change agency in a post-modern economic and trade environment.

The public-policy and strategic imperatives required for a modern, sustainable and competitive cattle sector are summarized in the congruence matrix shown overleaf.

**Congruence Matrix** – Goodness of Fit of Recommended Policy and Strategic Prescriptions with Stakeholders’ Key Strategic Objectives and the Assessed Relative Indices of Projected Impacts

Prescription	Strategic Objective			Relative Impact	Major Responsibility
	Value-chain Alignment	Enhanced Competitiveness	Attracting Youth & Women		
1. Large-scale community milk production centres for small farmers	***	***	**	Very High	<b>GOJ/BDPAJ</b>
2. Completion & restructuring Milk Marketing Project	***	***	*	High	<b>GOJ/BDPAJ/JDFF</b>
3. Central certified abattoir/meat processing facility with broad-based ownership	***	***	*	High	<b>GOJ/BDPAJ</b>
4. Expanded national school feeding prog.	**	***	***	Very High	<b>GOJ/BDPAJ</b>
5. Establish micro lending facility	**	***	***	Very High	<b>BDPAJ/GOJ</b>
6. Promote contract rearing by small farmers	***	***	***	Very High	<b>BDPAJ/GOJ</b>
7. Establishment of fodder farms	**	***	*	High	<b>BDPAJ/GOJ</b>
8. Industry specialization	**	***	***	Very High	<b>BDPAJ/GOJ</b>
9. Tariff rate quota on beef trimmings and milk powder	**	***	*	High	<b>GOJ</b>
10. Revamped cattle breeding strategy	**	***	***	Very High	<b>Breed Societies/BDPAJ GOJ</b>
11. R&D on non-traditional feeds	*	***	*	Med	<b>GOJ/BDPAJ</b>
12. Competency certification	**	***	***	Very High	<b>GOJ/BDPAJ</b>
13. Grant-loan mix for pasture development	***	***	***	Very High	<b>GOJ/BDPAJ</b>
14. School Feeding Prog. to drive product diversification.	***	***	**	Very High	<b>BDPAJ /GOJ</b>
15. Adoption of payment for milk on composition & quality	***	***	**	Very High	<b>BDPAJ/GOJ</b>
16. Mixed farming (tree crop/cattle)	**	***	***	Very High	<b>BDPAJ/GOJ</b>
17. Mixed species stocking (cattle sheep)	**	***	***	Very High	<b>BDPAJ/GOJ (ASSP)</b>

18. Affirmative action prog. for women & youth	**	**	***	Very High	<b>GOJ</b> /BDPAJ
19. Venture caoital to adopt/adapt 'share-milking'	**	***	***	Very High	<b>GOJ</b> /BDPAJ
20. Fast-track 'Emancipation Lands' Prog	***	**	***	Very High	<b>GOJ</b> /BDPAJ

# Revitalization of the Jamaican Dairy Sector: Evaluation of the Feasibility of Business Models for Intensive Dairy Production

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## *Summary and Conclusion*

*The study assessed the likely financial performance of seven potential models for new investments in dairy farming, employing intensive management systems, at scales or levels of specialization which seek to enhance the viability of such enterprises. The models for milk production enterprises, assumed stocking rates of 5 animal units per hectare under grazing, supplemented at the rate of one (1) ton proprietary concentrate per cow per year. Herd sizes varied from 60 to 1200 Jamaica Hope cows. An additional option, the integration of the Total Mixed Ration (TMR) feeding system with night-only grazing, and cows stocked at 6.25 per hectare; was also evaluated annual consumption of TMR was projected at approximately 2.8 tons dry matter per cow. The feasibility of enterprises adopting specialized rearing of replacement heifers and fodder farming was also examined.*

*The analysis highlighted the critical importance of economies of scale to the viability of de novo dairy enterprises, and the advantage of specialization over traditional, composite dairy farming. The high cost of dairy farm equipment and the non-linear relationship to farm size, make it imperative that new enterprises seek to apply available production technology for highly intensive dairy farming. They also suggest that greater intensification of existing enterprises might provide a less risky option for immediately responding to the opportunities created by the current surge in the international price of powdered milk.*

*Even at the comparatively high rates of stocking at which the models were evaluated, it appears that new dairy farms below 440 cows are likely to be considered risky for financing, at current rates of interest. This suggests that to promote small farmer dairy development, there is need to examine the viability of communal systems, such as joint-stock ownership, which confer economies of scale.*

# **REVITALIZATION OF THE JAMAICA HOPE: A Consortium Approach to the Implementation of a National Progeny Testing Programme**

## **SYNOPSIS**

The incidence and persistence of 'Mad Cow' Disease in North America, the traditional world leaders in the trade in cattle genetics, has created significant opportunities for export of Jamaican cattle genetics; in particular the Jamaica Hope. The export market for Jamaica Hope genetics has been modestly estimated at the equivalent of J\$100 million per year.

The juxtaposition of this opportunity against the apparent loss of direction of the breed in recent years, led the Jamaica Dairy Development Board (JDDB) in collaboration with the Beef and Dairy Producers Association of Jamaica (BDPAJ), to enlist the interest and principled support of WINDALCO, Serge Island Farms Ltd., the largest owners of Jamaica Hope cattle, and the Ministry of Agriculture, in the establishment of a **Consortium** to guide the revitalization of the Jamaica Hope breed of Dairy Cattle.

Leadership of the development of the breed since its inception in 1952 has been centralized within the Public sector. Consequently this development has been stymied over much of the past two decades, as a result of the imperatives of the series of Structural Adjustment programmes embarked on by successive administrations since 1977. In fact, from a recent genetic evaluation of the Bodles nucleus herd (Lawrence 2006), fluctuations in annual genetic merit can be directly correlated with the inconsistencies in budgetary support to the Research Division.

The primary objective of the Consortium is to streamline the breeding management of the Jamaica Hope for sustained genetic improvement to capitalize upon its established commercial attributes, both locally and internationally. The breed comprises 85 percent of the national dairy herd as purebreds and derivatives. This will be achieved through the establishment of a broad-based National Progeny Testing Programme, which would reduce reliance on the Bodles Herd which has been unable to function as the elite nucleus herd originally intended. Operationally this will be based upon:

1. Re-establishment of a National Milk Recording Programme, initially utilizing the Herd Recording capacity at Serge Island
2. Implementation of a Sire Testing and Proofing programme, initially utilizing the upgraded Artificial Insemination and Bull stud facilities at WINDALCO.
3. Ongoing genetic evaluation utilizing the Human Resource capacity of the Ministry of Agriculture's Research and Development Division.
4. Utilizing the opportunities for access to grant funding to non-profit NGO's available to BDPAJ

Implementation of the programme is underway with identification and selection of female parents (bull dams) currently ongoing.

The success of the Consortium will provide the fillip for attracting the participation of the broad spectrum of Jamaica Hope Breeders and presents a model for restructuring the genetic development of the other cattle breeds away from their historical total dependence on the public purse.

## MILK PRODUCTION EFFICIENCIES ON JAMAICAN DAIRY FARMS

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Milk production and feed and fertilizer use efficiencies were compared for the years 2005 and 2006.

The results indicate that medium sized farms were more efficient than large farms in feed use efficiency (22% better for return on feed cost), but large farms were more efficient (+267%) in terms of margin per hectare. Large farms continue to be superior in all other ratios.

Non-irrigated farms performed better than irrigated farms in feed use efficiency (+16%). Irrigated farms were superior to non-irrigated farms in all measured indicators except feed use efficiency, the most significant being margin per hectare (+644 %).

The study showed that between 2005 and 2006 margin per hectare declined significantly for medium sized farms (78.7%), due in part to prevailing macro-economic conditions. Large farms increased their stocking rate (+60%) resulting in a 42% increase in production per hectare. There was no change in margin per hectare, however, as the cost per litre of milk over the year increased by approximately 10 percent.

Although there were gains in some areas (2006/2005) the results indicate that dairy farms remain significantly below 2000 levels of efficiency.

Rising cost of inputs continue to be a major challenge for dairy farmers. Optimizing stocking rates and greater attention to detail in management of their resources still offer the best opportunity for increased competitiveness.

# ANNEXES

**Annex 1. Annual Imports of Milk Solids**

<b>Annual Imports of Dairy Products (kg)</b>		
	<b>2005</b>	<b>2006</b>
Milk & Cream	44,285	40,270
Skim Milk Powder	5,303,824	3,319,444
Whole Milk Powder	2,042,762	1,428,003
Condensed/Evap. Milk	77,278	67,218
Whey Powder	372,003	344,753
Ice cream	2,986,405	2,739,664
Yoghurt	281,374	149,287
Cheeses	6,228,642	3,177,545
Butter Fat	1,900,249	1,607,176
Others	114,574	710,866
<b>Total (kg'000)</b>	<b>19,351.4</b>	<b>13,584,726</b>

Source: STATIN

**Annex 2. Per Capita Expenditure by Wealth Groups (2005) (J\$)**

N= Product	<b>QUINTILES</b>				
	<b>POOREST</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>RICHEST</b>
	1247	1257	1257	1256	1283
Liquid Milk	43	135	208	329	836
Condensed/Evap Milk	366	645	858	1127	1692
Powdered Milk	291	316	298	327	440
Food Drink (Milk Based)	504	746	919	966	1524
Butter	126	156	204	215	389
Cheese	96	204	309	390	894
Other Dairy Products	166	266	387	433	848
Dairy products ex home	40	82	116	246	625
<b>Total</b>	<b>1632</b>	<b>2550</b>	<b>3300</b>	<b>4032</b>	<b>7248</b>

Source: STATIN-SLC 2006

**Annex 3. Grade "A" And "B" Milk Production (2005)**

<b>Year</b>	<b>Milk Production (litres)</b>		<b>Total</b>
	<b>Grade A</b>	<b>Grade B</b>	
2001	20,969,300	1,158,715	22,128,015
2002	19,692,380	771,726	20,464,106
2003	17,665,431	732,519	18,397,950
2004	14,987,982	462,000	15,449,982
2005	14,404,797	169,000	14,573,797
2006	14,402,524	105,587	14,508,111