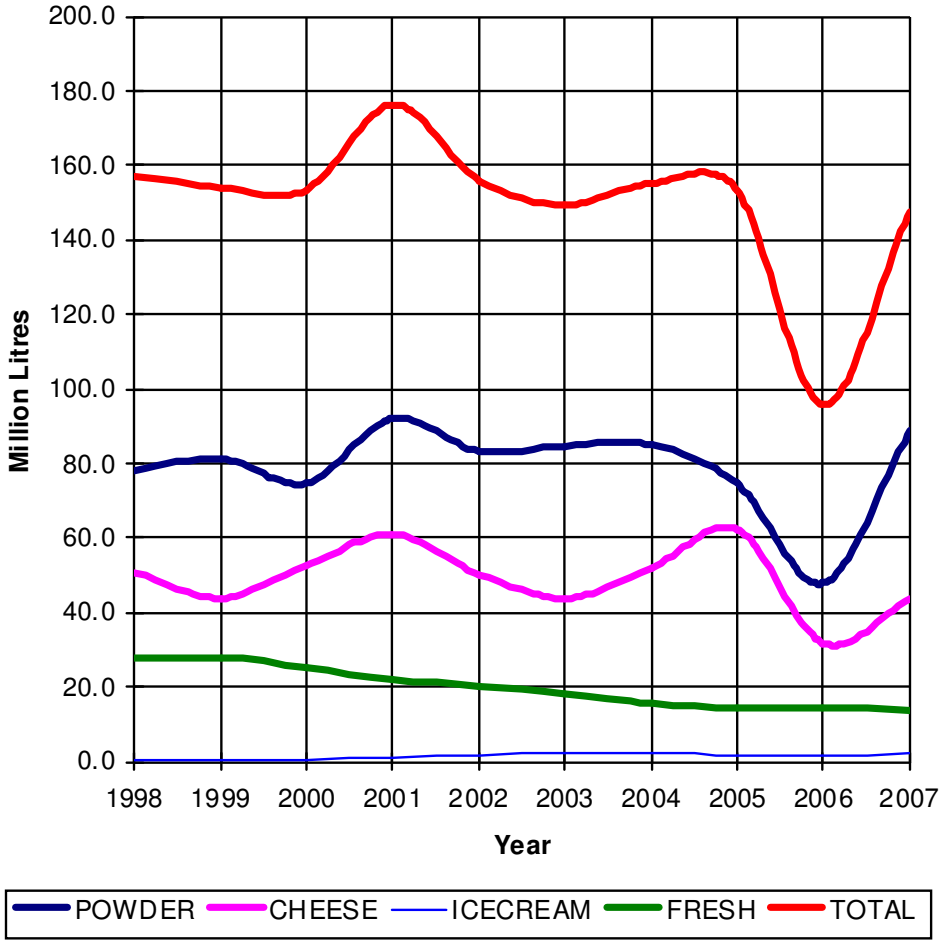
Jamaica Dairy Development Board

DAIRY

Facts & Figures

2007-08



PREFACE

The instability in the global market for dairy products intensified during 2007 vividly exposing Jamaica's level of food insecurity. On the flip-side, the events of the past two years have also highlighted the significant opportunities open to local milk producers.

The ninth volume of *Dairy Facts and Figures* explores options for the private and public sectors for achieving the levels of efficiency critical to exploiting these clearly unfolding opportunities, within a global market which exclusively rewards sustained competitive advantage.

The Board acknowledges the continuing assistance of STATIN, the Data Bank of the Ministry of Agriculture, Trade Board Ltd., The Beef and Dairy Producers Association of Jamaica, The Jamaica Dairy Farmers' Federation, The Eastern Livestock Development Association, 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
October 23, 2008

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1.0 JAMAICA DAIRY DEVELOPMENT BOARD

Calendar 2008 marks the ninth year of operation of the Jamaica Dairy Development Board. To date the Board has operated by Cabinet fiat having been established by Cabinet Resolution No. 13/199 of April 19, 1999. The Board has faithfully executed 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. The failure to legitimize the Board over the past nine years, however, has imposed critical limitations on its scope of activities, most notable of which has been the execution of its intended regulatory functions critical to promoting sustained development of the local productive sector.

The incoming political administration of September 2007, confronted by the volatility of the international food trade, has embraced the concept of the revitalization of the domestic dairy sector as a critical plank of its policy of enhancing national food security. Out of a recognition of the key role of the Dairy Board in the revitalization of the sector, Cabinet has since April 2008, given its approval for the enabling legislation, first introduced into Parliament in March 2002, to be restored to the Parliamentary agenda for debate during the 2008/09 legislative year. The process is well advanced and the updated Bill is expected to be placed on the Order Paper of Parliament for introduction by the Honourable Minister before the end of Calendar 2008.

The volatility of the international dairy market, experienced in calendar 2006, intensified during 2007, with the completion of the process, within the European Union, of the removal of export rebates on milk solids, extended beyond milk powder to all exports of milk solids originating within the EU. The effect was a doubling in the year-end price of Cheddar (US$5800/t) and a 114% increase in butter/butter-oil quotes (US$4500/5300/t) compared to December 2006 prices (USDA – AMS, Dec 2007). The prices of skimmed and whole milk powder, from which export subsidies had been removed in the summer of 2006, attained peak

prices exceeding US$5500 per ton, 139 percent above the prices which prevailed immediately prior to the cessation of export rebates.

The underlying world demand/supply imbalance was further exacerbated by the strategic switching between manufacturing end-products as manufacturers sought to maximize profit taking. This created great inconsistency and uncertainty in the local market and highlighted the chronic deficiency in the supply of locally produced fresh milk, which for the first time since trade liberalization enjoyed a competitive price advantage over imported powder, whole milk powder retailing for as high as $72.00 per 80g sachet ($112 per litre fluid equivalent). This competitive advantage, proved very transient, as spiralling cost of inputs forced significant increases in the fresh milk price asked of processors, increasing on average, point-to-point, by approximately 32 percent as at March 2008, to above $42 per litre.

With milk solids trading consistently downward since the peaks of the last quarter of 2007, local milk producers and processors are confronted with the inescapable imperative of significantly raising efficiencies, on-farm and in-plant, in order to protect and increase market share. This is particularly so as the removal of export rebates by the EU - our main source of imports -minimises the validity of further tarrification as a protective cushion.

Out of recognition of the inescapable imperative on public policy for facilitating the development of the efficiencies critical to the sustainable redevelopment of the local milk producing sector, the Jamaica Dairy Development Board, continued during fiscal 2007/2008 to pursue its functions of policy analysis, information dissemination and identification of technical and financial resources for sector transformation. These activities included:

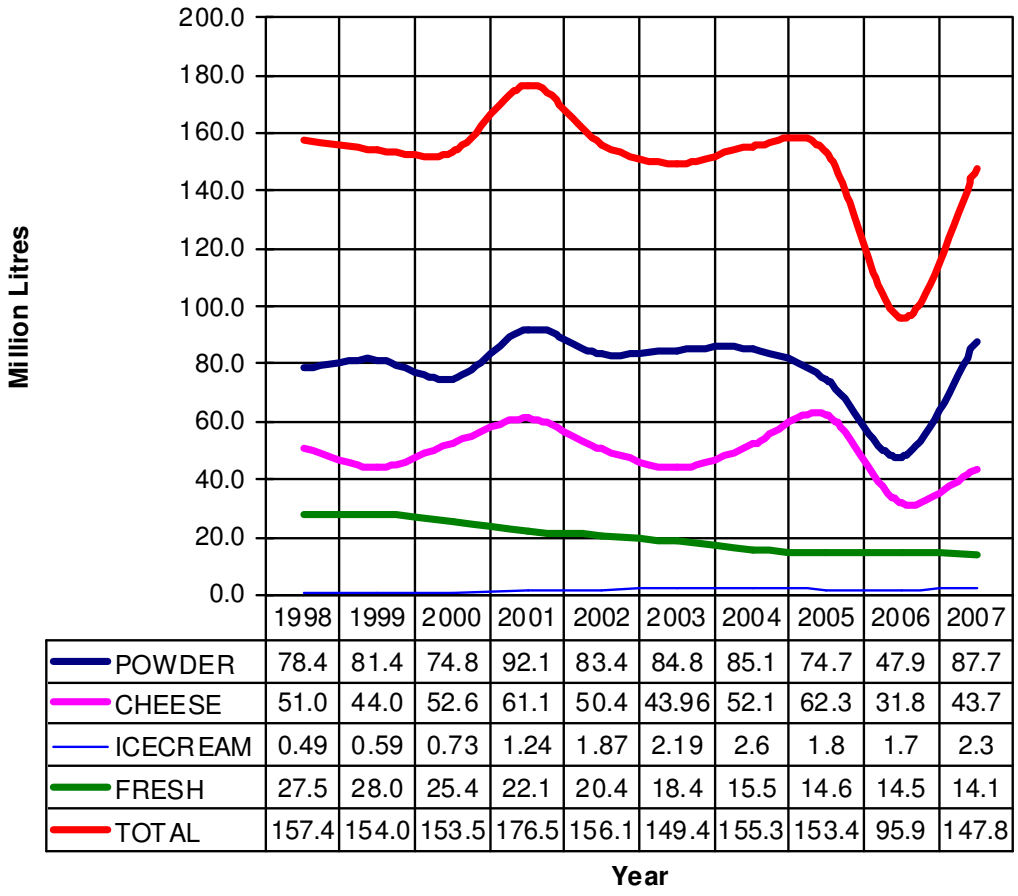
- Publication of the 8th volume of Dairy Facts and Figures – www.moa.gov.jm
- Report of the 2006 Annual Cost of Production survey;
- Draft Cabinet Submission for the Revitalization of the Dairy Cattle Sector, in collaboration with the Beef and Dairy Producers Association of Jamaica (BDPAJ);

- Submission of proposal to the European Banana Support Programme for Technical Assistance in a study to determine the future direction of the Milk Marketing Project of the Jamaica Dairy Farmers' Federation (JDFF);
- Submission of proposal to FAO for technical assistance to undertake a market study of the local Beef sub-sector;
- Collaborated with ASSP in drafting of Tender Document for a Study to Determine the requirement and siting of abattoirs constructed to satisfy international food safety standards;
- Collaborating with BDPAJ in the development of a proposal for the restructuring and refinancing of the Milk Marketing project of the JDFF.
- *Revitalization of the Jamaican Dairy sector: Evaluation of the Feasibility of Business Models for Intensive Dairy Production.* Paper presented at Annual Conference 2008, Jamaican Society for Agricultural Sciences. www.moa.gov.jm
- Submission of proposal for the establishment during fiscal 2008, of a Dairy Sector Revitalization Programme to be executed on behalf of the Ministry of Agriculture by the Jamaica Dairy Development Board

1.1 The State of Jamaica's Food Security

The 2007 *Survey of Living Conditions* conducted by the Statistical Institute of Jamaica, shows a nominal increase of 24.6 percent by the poorest 40 percent of the Jamaican population, with respect to their annual *per capita* expenditure on milk and dairy products. The STATIN, JSLC database indicates an average per capita expenditure of $2604.00 for the poorest 40 percent of the population. Adjusted for an inflation rate of 16.8 percent, per capita consumption of dairy products - on a **fresh milk-price equivalent** basis - declined to 15.4 litres in 2007 compared to 26.9 during the previous year. This converts to 42 ml daily compared to the WHO recommended minimum of 200 ml per day. Based on the combined levels of local production and imports (Figure 1), Jamaicans consumed, on average, 149 millilitres per day, on a **fluid equivalent** basis.

Figure 1: Sources Of Milk Solids



	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
POWDER	78.4	81.4	74.8	92.1	83.4	84.8	85.1	74.7	47.9	87.7
CHEESE	51.0	44.0	52.6	61.1	50.4	43.96	52.1	62.3	31.8	43.7
ICECREAM	0.49	0.59	0.73	1.24	1.87	2.19	2.6	1.8	1.7	2.3
FRESH	27.5	28.0	25.4	22.1	20.4	18.4	15.5	14.6	14.5	14.1
TOTAL	157.4	154.0	153.5	176.5	156.1	149.4	155.3	153.4	95.9	147.8

The above clearly speaks to the nutritional vulnerability of a significant swath of the Jamaican population as indexed by their consumption of the most basic of human food. In spite of the downward trend in dairy prices on the international market, and moreso that of skimmed milk powder, the expectation is for huge price swings over the medium term as the fundamental world demand/supply imbalance is incapable of correction within the short term. Analysis of the trends in world milk production and consumption over the five-year period to 2007 (Dairy: World Markets and Trade 2007, USDA – FAS, Dec 2007), indicate average annual growth in production of 1.8 percent compared with an average 2.2 percentage annual increase in consumption. As projected by the FAO at the beginning of the

millennium, the ever-increasing global demand for dairy products is likely to be substantially satisfied only by significant expansion by developing countries such as Jamaica, in their production of milk. The obvious shift in the equilibrium price for milk solids since mid-2006 holds grave implications for the affordability of imports by a significant proportion of Jamaicans. Contrasted against this, the well established potential for competitive local production of milk, remains untapped.

The Board uses this medium to restate its long-held position that nutritional assurance of the most vulnerable segments of the population can be guaranteed only by direct targeting as against tariff concessions which, historically, have been appropriated by the distributive trade to the disadvantage of the consumer for whom, *a priori*, they were intended. The speed differential between the upward and downward movement of local retail prices of milk powder, for example, with the changes in international prices, reinforces this position. A rationalized National School Feeding Programme, based upon the utilization of locally produced milk (and beef), provides a vehicle for implementing an effective social safety net, while simultaneously providing a market buffer for the sustainable revitalization of the dairy sector. In conjunction with this, the Dairy Board urges a revisit of its 2005 proposal for implementation of a Tariff Rate Quota regime, as a measure to stimulate increased use of locally produced milk as a manufacturing raw material.

The achievement of sustained competitive advantage by the local dairy sector will require substantial public support which will need to address, not only the technical efficiencies of production, but also issues such as the cost of capital and organizational strategies to realign the value chain to guarantee the livelihood of the primary producer.

2.0 STATUS OF THE DAIRY SECTOR

2.1 Overview

The passage of hurricane Dean in August 2007 resulted in a deviation in milk production from a growth trajectory which was anticipated to result in a surpassing of the 14.51 million litres produced in calendar 2006. The substantial reduction in final quarter milk production resulted in a cumulative 2.9 per cent reduction in annual output at 14.1 million litres.

Restoring the dairy sector to a growth path to increase its contribution to national consumption has been made extremely difficult by the severe contraction in cow numbers over the preceding years. A canvass of local processors indicates a national herd count of approximately 7000 mature females. Production in 2007 suggests an average of approximately 2000 litres per cow in the national herd; more than 30 percent below the established potential of the Jamaica Hope, the predominant dairy breed. Increase in the productivity of dairy farms is clearly an imperative. However, even at ideal performance coefficients, current herd size is well below the critical mass required to move milk self-sufficiency ratio significantly above the 9.5 percent recorded in 2007 (Figure 1). Any medium term strategy for expanding milk production will therefore require a population boost through the importation of breeding stock. This is rendered even more urgent given the severe declines in the local population of beef cattle which historically presented a reservoir for dairy expansion through cross-breeding. The Jersey, with its proven adaptability to tropical conditions and ease of assimilation into the Jamaica Hope, is suggested as the breed of choice. A 1980 report of an earlier import drive by the Agricultural Development Corporation based upon the import mainly of Holstein calves (Turner and Hendricks, 1980), indicated a 10-year average mortality rate of 3 percent from over 2000 calves imported and reared at Amity Hall, St. Catherine. It is suggested that the importation of 6-9 month old Jersey yearling heifers, pre-immunized against the tick-borne diseases, would further minimize morbidity and mortality rates. Importation of embryos also provides a

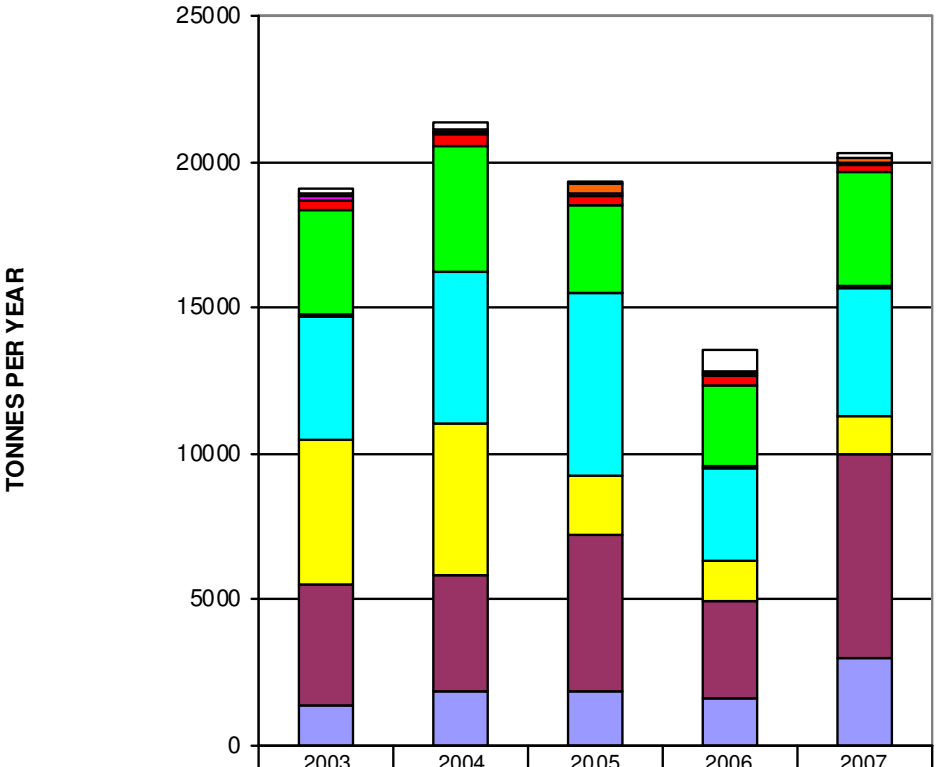
supplementary strategy. However, the economics of embryo vs. yearling imports needs to be assessed given the unlikelihood of achieving implantation rates greater than 45-50 percent in tropical countries such as Jamaica. The incidence of 'Mad Cow disease' in North America imposes a hurdle to any import strategy. However, the fact that a number of countries, including China, have reopened their borders to cattle imports ex USA, suggests that there are well established risk mitigation factors developed by the OIE, which Jamaica might examine in developing a minimum-risk Veterinary protocol to guide imports from North America. The alternative strategy of importing ex Oceania reduces the feasibility of such imports given the high cost of transport to Jamaica.

Jamaica retains strategic advantages for significant industry expansion to contribute, not only to increased national self-sufficiency, but also significantly to the requirements of the wider CARICOM region, which has an estimated annual consumption of dairy products well in excess of 500,000 tons. The current upheavals in the World financial system suggest the likelihood of a significant reallocation of global investment capital back into the real economy. With 51 percent of agricultural land having been classified as being most suited to the production of improved pasture, Jamaica possesses a strategic resource which could be used to tap into Foreign Direct Investment in search of productive areas for investment. It is considered that significant pockets of investment capital reside within CARICOM which might be channelled into dairy development, at significantly lower risk than the financial markets currently present. An immediate, focused investment promotion campaign is clearly indicated.

2.2 Imports of Milk Solids

Total imports of milk solids in 2007, at 20,295 metric tons, indicate an accommodation by the Jamaican consumer, to the rapidly increased prices commencing in 2006 when imports dipped to 13,584 tons (Fig.2).

Figure 2: Dairy Product Imports 2003-2007



	2003	2004	2005	2006	2007
Others	163	254	114.6	710.9	140.7
Yoghurt	77	106	281.4	149.3	149.3
Cond./Evap. Milk	173	55	77.3	67.2	120
Whey Powder	275	438	372	345	246
Ice Cream	3633	4271	2986	2739	3872
Milk & Cream	19	35	44.3	40.3	87.7
Cheese	4258	5209	6229	3177	4368
Whole Milk Powder	4918	5205	2043	1428	1330
Skim Milk Powder	4136	3950	5304	3319	7008
Butter Fat	1414	1882	1900	1607	2974

Years

Source: STATIN

The extent of the price escalations is emphasized by the unprecedented expenditure of US$59.5 million (Table 1), 22 percent above the value of imports of 2004, the previous high, when 21,240 metric tons of milk solids were imported. With respect to powdered milk, cumulative imports increased by 76 percent compared to those of the previous year; the result exclusively, of a doubling in imports of skimmed milk powder. Without access to the

disaggregated data on raw materials vs. consumer goods it is difficult to trace the end-usage of skimmed milk powder. However, the apparent increase in the presence of reconstituted products in the retail trade indicates an attempt to exploit the market for liquid milk. This is supported by the importation of in excess of 1.1 million tons of butter-oil, the highest for the past five years.

At a declared CIF value of US$15.082 million, the imputed import cost for skimmed milk powder, of approximately US$2152 per ton, suggests a gross understatement when compared to published European and New Zealand FOB prices ranging from a low of US$2700 (NZ - January 2007) to US$5500 per ton (Source: AMS – USDA, International Dairy Market News, Dec 2007). The imputed CIF cost of whole milk powder of US$3896 per ton, though more proximate to published FOB prices (High FOB average – US$4754) similarly indicates significant understatement in costs declared to Customs. The availability of FOB quotes on a fortnightly basis provides a real-time reference against which declared costs need to be evaluated as a means of effectively enforcing an already 'soft' tariff regime.

Table 1. Annual Imports of Milk Solids by Value (US$'000) 2003-2007

Product	**2003**	**2004**	**2005**	**2006**	**2007**
Milk & Cream	1.64	52.14	104.39	81.64	313.6
Skim Milk Powder	7,288.68	8,368.39	12,561.85	7,724.38	15,082.21
Whole Milk Powder	9,784.04	10,975.58	4,926.71	3,947.31	5,181.60
Cond./Evap. Milk	83.89	2.27	127.27	142.38	295.69
Whey Powder	412.95	638.12	673.11	647.30	574.26
Ice Cream	5,527.86	5,774.27	5,559.96	6,062.73	5,988.75
Yoghurt	273.47	236.12	497.16	549.7	681.79
Cheeses	12,458.01	16,191.12	22,196.43	15,094.12	22,337.24
Butter Fat	2,765.40	4,893.11	5,531.95	3,689.56	5,951.03
Others	551.12	414.51	464.78	1,734.26	3,096.22
Total	**39,147.0**	**47,545.6**	**52,643.6**	**39,673.4**	**59,502.39**

Source: STATIN Import Database

Year-end 2007 prices for European skimmed milk powder ranged from US$3600 to $3800 per ton; a price range which held through the first quarter of calendar 2008 (www.ams.usda.gov).

The low-end price compared with a peak of US$5500 per ton. The difference of 54 percent is indicative of the level of price fluctuation to be expected well into the medium term, as the fundamental demand-supply imbalance is unlikely to be corrected within this time horizon. With respect to whole milk powder, the corresponding variance was approximately 35 percent from a 2007 peak price of US$5700 per ton. The differential rates of fluctuation in FOB prices between skimmed and whole milk powder were the result, primarily of an 11-percent increase in exports of skimmed, contrasted with a 5 percentage decline in the export trade in whole milk powder in calendar 2007 compared with 2006. The surge in SMP exports was led by a 93 percent growth in exports from the European Union. In contrast, butter production within the EU, was held relatively constant between 2006 and 2007; apparently in an effort to capitalize on the 212 percent increase in export price between January and October 2007. The US and New Zealand were the major beneficiaries of this market manipulation, exports from the former quadrupling and the latter increasing by 20 percent.

2.3 Trends in the International Market for Milk Solids

Production of fluid milk by the world's leading producers, in 2007, increased nearly 2 percent over the previous year to 427,285 million tons. This compares with an average annual growth of 1.5 percent during the four preceding years (Table 2).

Table 2. World Milk Production, Consumption and Exports 2003-2007

	2003	2004	2005	2006	2007
Fluid Milk Production/Consumption (Million tons)					
Production - World	394.4	401.4	410.0	419.0	427.9
" - China	17.46	22.61	27.53	31.93	35.00
Consumption – World	150.2	155.4	159.3	162.7	167.1
" _ China	7.66	10.32	12.50	13.81	14.82
Exports (Million tons)					
Cheese	1.196	1.240	1.238	1.234	1.357
Butter	0.874	0.899	0.787	0.744	0.856
Skimmed Milk Powder	1.170	1.159	1.000	1.003	1.114
Whole Milk Powder	1.420	1.626	1.509	1.522	1.442
Total Exports (Fluid Equivalents)	43.22	45.34	41.75	40.50	44.21
Powder Imports – China (000' mt)	142	152	120	136	91

Source: USDA-FAS, July 2008

The development of the Chinese dairy industry is worthy of highlight as an example to developing countries such as Jamaica:

- Milk production in China has doubled over the five year period to 2007;
- The imputed annual growth rate in output of 20 percent compares with an average of 0.8 percent among the 38 other world-leading producers;
- From 4.4 percent in 2003, China's milk production in 2007 accounted for 8.2 percent of production by the leading world producers;
- Correspondingly its imports of milk powder declined by 35 percent between 2003 and 2007;
- The USDA – FAS data indicate that Chinese exports of whole milk powder in 2007 represented 4.5 percent of world trade.

The elimination of export subsidies on all milk solids by the EU, which had commenced with powdered milk in mid-2006, was completed in the summer of 2007.

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

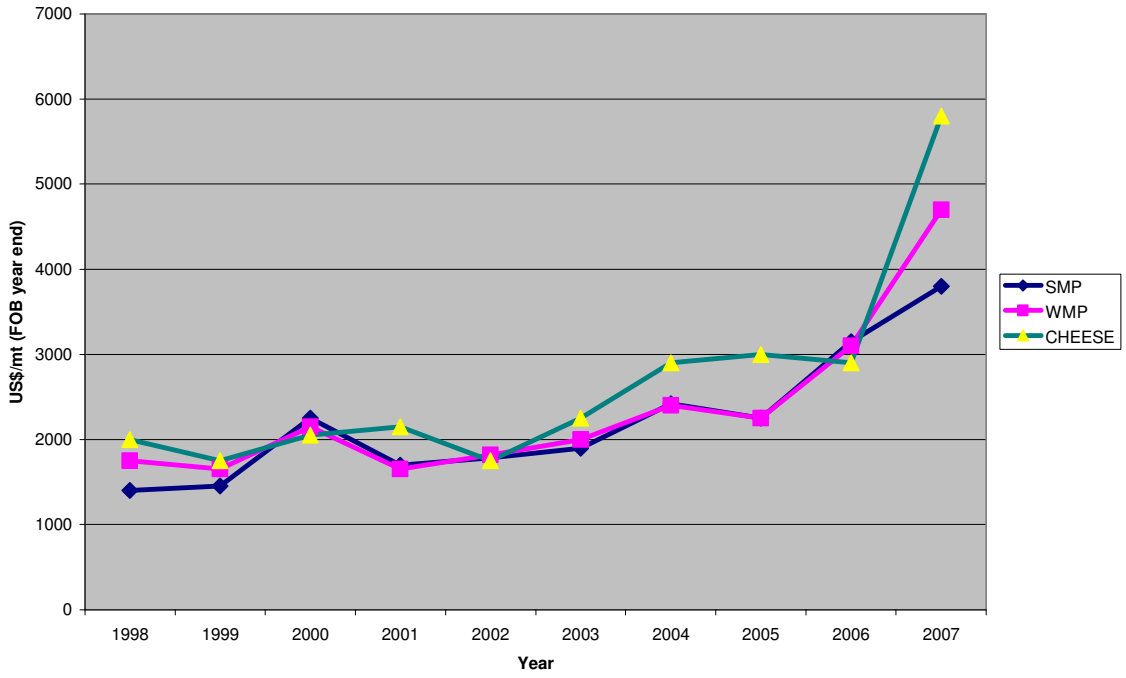
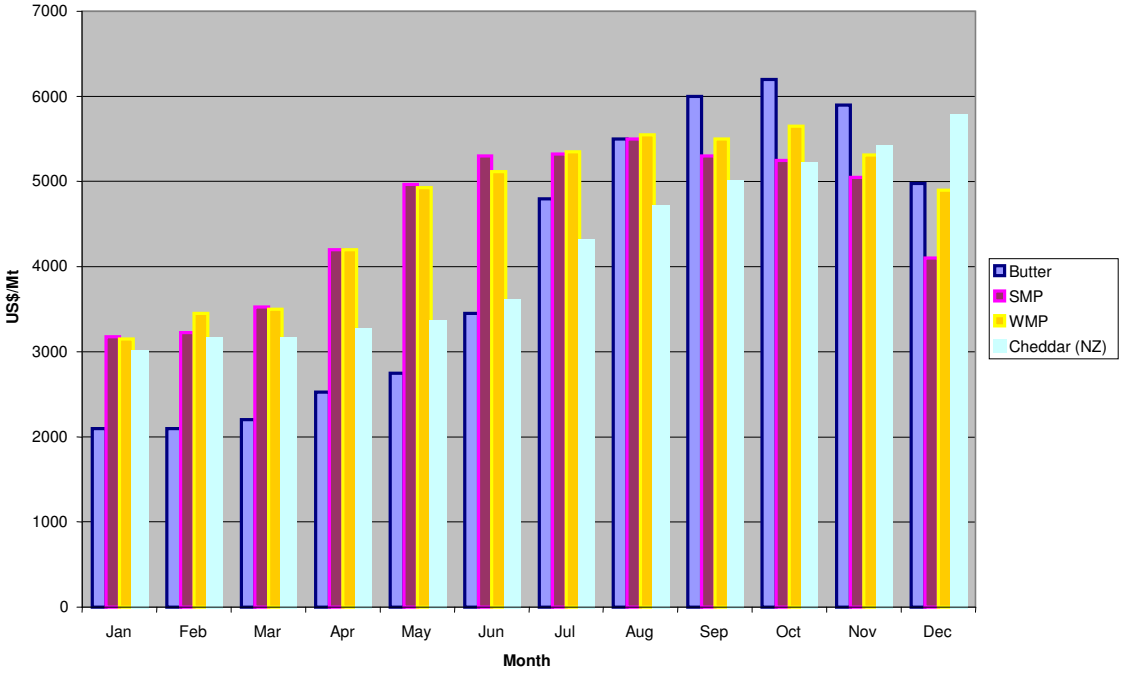


Figure 3 highlights the variation in closing FOB prices for powdered milks (ex EU) and cheese (Oceania) over the ten-year period to 2007 (www.ams.usda.gov). Cheese prices peaked in December at US$5800 per ton, a 115-percent increase over the corresponding 2006 quote. The corresponding

increase in the prices of skimmed and whole milk powder, were 29 and 52 percent respectively. Prices for skimmed and whole milk powder at year end represented declines of 31 and 17.5 percent, respectively, below peak prices obtained during 2007. Figure 4 depicts the fluctuations in prices for the four major traded milk solids during 2007.

Fig. 4 International Price Fluctuations in /Major Milk Solids- 2007 (USD/mt)



The volatility of the international market had a significant impact on the availability and consumer prices of dairy products within the local trade. Whole milk powder, for example, peaked at J$72.00 per 80g sachet on some supermarket shelves, a near doubling compared to prices which prevailed for much of 2005. This prompted a three month (Jan. – March) duty reduction regime for whole milk powder imported for direct consumption, as part of an emergency alleviation measure implemented by the Ministry of Industry, Investment and Commerce. The fact that this 60-percentage reduction in import duties (20% vs. 50%) extended under this intervention by the Jamaican Government, was manifested in only a 10 percent reduction in retail prices during this period, speaks eloquently to the need for direct targeting as a means

of ensuring that the benefits of Government's price alleviation interventions accrue directly to the most vulnerable segments of the population.

2.4 Consumer Expenditure on Milk Solids

Per capita expenditure on milk solids in 2007 (excluding dairy products consumed away from home) increased in nominal value, by 25.6 per cent over the previous year; for a national average of $4594 (Table 3). Adjusted for an annual rate of inflation of 16.8% for calendar 2006, this translates to an apparent increase in real expenditure of approximately 7.5 per cent (Table 4). In reality, however, the increases in dairy product prices, having significantly exceeded the average rate of inflation, per capita consumption declined below 2006 levels. On a fresh milk equivalency basis, real per capita expenditure in 2006, translated to an average per capita consumption of approximately 55.7 litres per annum or 152 ml per day. This was similar to the estimate of fluid equivalent consumption calculated based on combined imports plus local production.

Table 3: Mean Per Capita Expenditure on Selected Dairy Products –2007 (J$)

Product	**Jamaica** (n=9175	**KMA** (n=2920)	**Other Towns** (n=2011)	**Rural Areas** (n=4244)
1. Liquid Milk inc. flavoured	500.4	618.2	638.2	354.1
2. Condensed/Evap. Milk	1132.5	1227.0	1286.6	994.6
3. Food Drink	1189.8	1488.4	1163.5	996.8
4. Powdered Milk	371.4	308.0	366.6	417.2
5. Butter	263.6	303.0	287.9	225.1
6. Cheese	505.1	663.2	609.4	346.9
7. Other Dairy Products (yoghurt, ice cream)	631.5	798.9	639.2	512.7
Total	**4594.3**	**5406.7**	**4991.4**	**3847.4**
Adjusted for Dairy Meals 'Away from Home'	**4835.0**	**5691.0**	**5386.6**	**3984.7**

n= number of household members
Source: STATIN SLC (2007) database

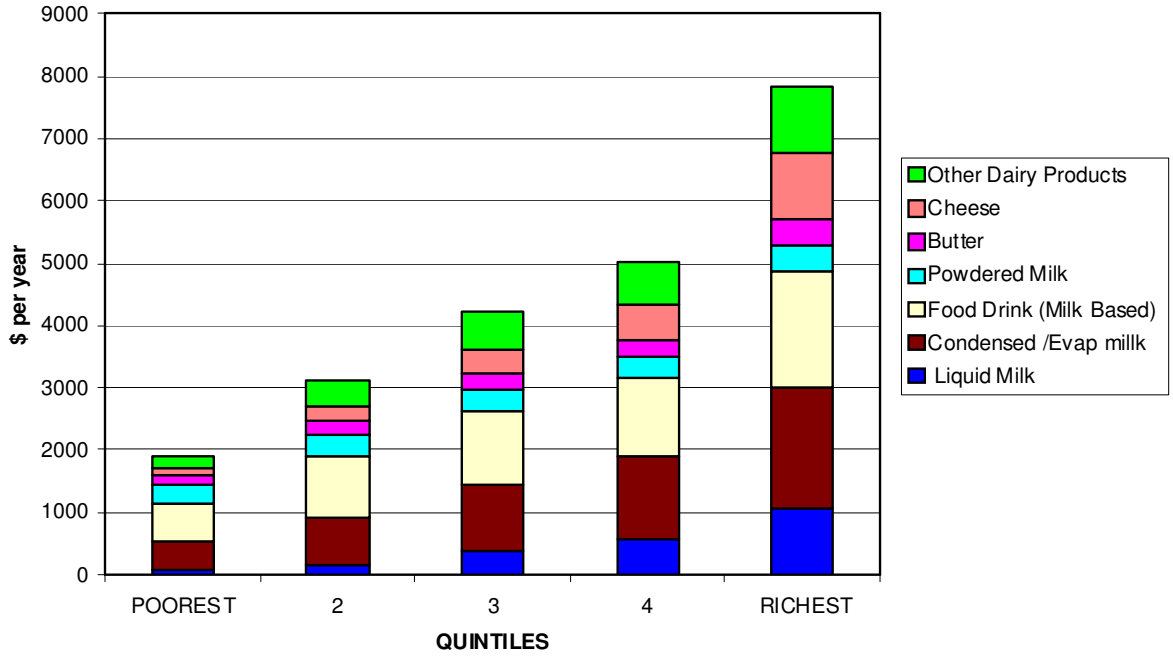
It is difficult to make inferences about consumer behaviour from the data in Table 4 without benefit of a market survey. However, the reallocation of the consumer dollar between 2006 and 2007 might be reflective of a response to the level of price increase as well as consumer perception of maximum value for money in a high-inflation market. The former applies to expenditure on liquid milk, the retail price of which moved on average by only 10 percent, while the similar level of increased expenditure on products such as yoghurt might be reflective of the consumer's disposition toward products perceived as associated with healthy lifestyles.

Table 4. Changes in Consumer Demand for Milk Solids (2007 vs. 2006)

Product	**2006**	**2007**	**Change in Real Expenditure**
Liquid Milk	347.8	500.4	+0.232
Cond/Evap.	958.9	1132.5	+0.011
Food Drink	946.0	1189.8	+0.077
Powdered Milk	323.8	371.4	-0.018
Butter	227.2	263.6	-0.006
Cheese	411.3	505.1	+0.051
Other (incl. Yoghurt, Ice cream)	442.0	631.5	+0.223
Total	**3657.0**	**4594.3**	**+0.076**

The gap in per capita expenditure between the wealthiest and the poorest quintiles ($7845 vs. $1905) - a multiple of 4.1 - was similar to that of 2006 (Figure 5). It is worth noting that the poorest quintile of the population increased per capita expenditure by 19.7 percent in 2007, 2-percentage units higher than the expenditure increase by the wealthiest quintile. While this might be indicative of the impact of Government's Social Safety Net programmes, it might also be reflective of the greater discretionary capacity of the wealthy with respect to their apportioning of food expenditure.

Figure 5: Mean Annual Per Capita Expenditure on Dairy Products Within Wealth Groups - 2007



Daily per capita consumption of dairy products in 2007 averaged 149 millilitres fluid equivalents, 25.5 percent below the WHO recommended minimum daily intake. On an inflation-adjusted basis daily per capita expenditure by the poorest 40 percent of the Jamaican population translated to 42 millilitres fresh milk equivalent.

2.5 Value of the Industry

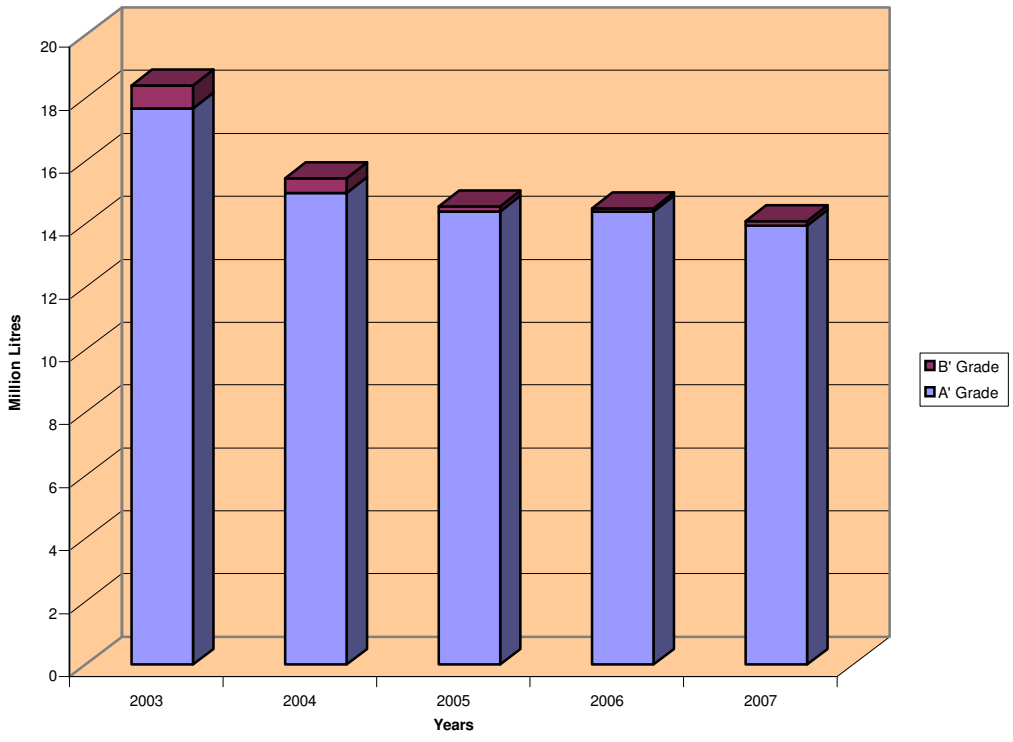
Based on the adjusted *per capita* expenditure of $4835 (Table 4), and a population estimate of 2.72 million, turnover by the dairy industry in 2007 is estimated at approximately $13.15 billion a 27 percent growth over the imputed contribution to GDP in 2006.

This has to be intuitively interpreted as presenting tremendous opportunity for local investment in dairying given that returns at farm gate ($554 million) accounted for only 4 percent of market value.

2.6 Local Milk Production

Milk production in 2007, influenced by the passage of the August hurricane, declined 2.9 percent to 14.1 million litres, compared to the previous year (Figure 6).

Figure 6. LOCAL MILK PRODUCTION (million litres)



Against a 32.4 percent increase in farm gate price ($37.86 – March 2008), retail prices for fresh milk increased only by 10 percent as processors absorbed much of the farm-gate increases in an attempt to retain market share. Consequently the average retail price of pasteurized milk moved from $129.42 to $142.10 during fiscal 2007.

Deliveries of B-grade milk increased by almost 34,000 litres to 139, 568 litres. Notwithstanding the 32 per cent increase in milk designated B-grade, the formal market remains virtually inaccessible to the traditional small farmer. To recapture the stabilizing effect of milk production on rural development will require public intervention to reduce the high transaction costs entailed in the delivery of milk to processors by the small farmer. Given the growing critical importance of Food Safety Standards, strategies which allow small farmers to enjoy the benefits of scale economies, as for example by large-scale joint-stock owned milking farms ('Cow Parks') present the most feasible option for sustainable small farmer milk production. In this regard several underutilized state-owned properties, including some recently taken out of export banana production, present themselves as candidate 'cow parks'.

3.0 Cost of Production Survey 2007

Summary of Findings

Average cost of producing milk in Jamaica during calendar 2006 was estimated from a survey of 12 farms during the period January to March 2007. There were no small farm participants in the current survey.

Farms were compared on the basis of variable costs in order to remove the effect of farm size and structure as they relate to fixed costs.

Output per hectare, at 5037 litres per hectare was 11 percent below that of 2006. This was likely a reflection of the impact of the surge in the prices of key inputs.

Mean variable cost of producing milk in 2007 was $30.56, a 29 percent increase over the previous year. At an average farm-gate price of $28.33, this represented an overall contribution margin of -$2.23.

The escalating costs of inputs, in particular fertilizers, concentrate feed, utilities and others, pose a serious challenge to farmers in raising efficiency levels. At an average farm-gate price equivalent to US$0.41 per litre, the imperative of achieving and sustaining international competitiveness is particularly compelling.

Relevant tables are attached for information.

Table 5: Comparison of Mean Stocking Rates and Production per Hectare among Farm Sizes

Category	Stocking Rate (cows/ha)	Production (L/ha)
Medium Non-Irrigated	1.62	3209
Medium Irrigated	2.99	3747
Large Non-Irrigated	1.67	3587
Large Irrigated	2.95	8003
Overall mean	**2.11**	**5037**

Table 6: Comparison of Local and International Costs of Producing Milk

Category	2002	2003	2004	2005	2006	2007
AVC Jamaica (J$)	17.02	17.05	19.13	22.09	23.70	30.56
" (US$)	0.35	0.29	0.31	0.35	0.36	0.44
Farm Gate Ja. (J$)	18.00	18.00	20.00	22.63	26.00	28.33
" (US$)	0.37	0.31	0.33	0.36	0.39	0.41
AVC USA (US$)	0.22	0.23	0.23	0.25	0.26	0.30
Farm Gate USA (US$)	0.27	0.28	0.35	0.34	0.29	0.43
Retail Price Ja. (J$)	56.73	68.00	71.37	76.00	81.00	118.17
(US$)	1.17	1.17	1.16	1.20	1.23	1.71
Mark-up (%)	233	277.78	256.85	235.84	215.40	287
Retail Price USA. (US$)	0.73	0.73	0.83	0.84	0.81	0.92
Mark-up (%)	170	161	137	147	179	114
AVC NZ (US$)	0.12-0.15	0.15-0.18	0.15-0.18	N/A	0.14	N/A

Table 7: Comparison of Average Direct Costs over the Past 7 Years on Medium and Large Farms

Items	**2003**	**2004**	**2005**	**2006**	**2007**
AVC. (J$)	16.05	19.13	22.32	23.70	30.56
Av Farm Gate Price (J$)	20.00	22.00	24.00	26.00	28.33
AVC Ja. (US$)	0.29	0.31	0.35	0.39	0.41
Irrigated Farms	17.42	25.51	18.42	20.25	27.91
Non-irrigated Farms	16.04	19.63	25.90	27.66	31.45
Gross Margin (%)	11.0	4.5	-3.0	11.0	-8.0

Table 8. Changes in Proportion of Variable Cost Due to the Various Input Categories

Category	**2003**	**2004**	**2005**	**2006**	**2007**
Feed	38.0	39.0	39.0	29.9	33.1
Utilities	7.0	7.0	7.0	6.5	10.1
Labour	21.0	13.0	13.0	24.3	16.9
Vet & Med	4.0	3.0	3.0	3.4	4.3
Pasture Maintenance & Fertilizer	5.0	4.0	4.0	5.4	2.3

ABSTRACTS/SUMMARIES/SYNOPSES

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.

Paper presented at 19th Annual Conference, Jamaican Society for Agricultural Sciences
Bodles Agricultural Station, February 20, 2008

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

P.G. Jennings

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.

Discussion paper prepared as guide for a revamped national breeding programme for the Jamaica Hope breed of dairy cattle

RECOVERING FROM THE TRAUMA OF LIBERALIZATION: THE JAMAICAN DAIRY INDUSTRY AS CASE STUDY

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ABSTRACT

Significant gains in Jamaican milk production achieved during 1987-1992, were reversed by the ensuing trade liberalization policy. The adoption of a *laissez faire,* market determined economic model, coincided with severe economic constraints, the foreign-exchange led inflationary spiral and escalating agricultural lending rates, precluding attainment of international competitiveness by the local industry. The confluence of proactive subsidy policies within the EU and the macro-economic dislocations from liberalization resulted in the exodus of over two-thirds of farmers from the formal market.

The gains pre-liberalization were mainly from investments by two large corporate entities, encouraged by a price-equating mechanism which made processors indifferent to fresh milk vs. imported milk powder, as raw material. Restrictions on the reconstitution/recombination of milk were also advantageous. The abrupt substitution of a 'soft' tariff regime plus the influx of dumped milk powder imports proved injurious to local milk production.

The incoming Government has enunciated a policy of **enhanced national food security** in which the dairy sector is assigned a strategic role.

Jamaica retains strategic advantages for recovery of its dairy industry to levels attained pre- liberalization. This requires consensus within a broader framework of **Food Sovereignty** to minimize the impact of abrupt shifts of policy and provide the consistency critical to attracting new investments in a competitive local dairy sector. The CSME provides an economic framework for a cooperative regional approach to investment in the Jamaican dairy sector.

Paper prepared for International Congress on Tropical Agriculture, UWI, St. Augustine,
Trinidad and Tobago, Nov. 30 – Dec. 05, 2008-10-23
"Overcoming Challenges to Developing Sustainable Agri-Food Systems in the Tropics"

ANNEXES

Annex 1. Annual Imports of Milk Solids

Annual Imports of Dairy Products (kg)		
	2006	**2007**
Milk & Cream	40,270	87,716
Skim Milk Powder	3,319,444	7,008,598
Whole Milk Powder	1,428,003	1,329,812
Condensed/Evap. Milk	67,218	174,160
Whey Powder	344,753	249,905
Ice cream	2,739,664	3,871,902
Yoghurt	149,287	149,294
Cheeses	3,177,545	4,368,135
Butter Fat	1,607,176	2,050,245
Others	710,866	1,009,593
Total (kg'000)	**13,584,726**	**20,295,360**

Source: STATIN

Annex 2. Per Capita Expenditure by Wealth Groups (2007) (J$)

		QUINTILES			
n=	1318	1322	1318	1317	1338
Product	**POOREST**	**2**	**3**	**4**	**RICHEST**
Liquid Milk	80	156	374	572	1084
Condensed/Evap Milk	471	745	1061	1313	1904
Powdered Milk	322	376	334	358	398
Food Drink (Milk Based)	578	985	1194	1260	1888
Butter	145	192	275	284	432
Cheese	110	240	389	552	1080
Other Dairy Products	199	435	590	680	1061
Dairy products ex home	57	116	125	219	739
Total	1962	3245	4342	5238	8586

Source: STATIN-SLC 2007

Annex 3. Grade "A" And "B" Milk Production (2007)

Year	Milk Production (litres)		Total
	Grade A	Grade B	
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
2007	13,954,328	139,568	14,093,896