

Jamaica Dairy Development Board

DAIRY

Facts & Figures

2004-2005

PREFACE

This sixth volume of *Dairy Facts and Figures* coincides, hopefully, with a watershed in the life history of the local Dairy Farm Sector. The passage of hurricane Ivan has clearly exposed the underlying weaknesses as well as the strengths of the sector. The latter clearly reside in the resilience and stability of the large-farm sub-sector as the base for the sustainable recovery of the local industry. The vulnerability of the medium and small-farm sub-sectors to the vagaries of the economic and natural environments and their absolute dependence on supportive public policy have also been laid bare as major areas of weakness.

Industry stakeholders, public and private, remain sanguine of the future of the sector and have demonstrated their commitment to its strategic reorientation for sustainable competitive advantage.

To enable this process we have taken a decision to enhance the utility of this publication as a tool for decision-making by public as well as private stakeholders.

Beginning with this volume, *Dairy Facts and Figures* will assume a less narrative and more analytical profile. This will necessitate greater liberty in interpretation of the existing environment, local and global, within which we operate as well as the frank designation of spades as just that; "spades" Strategic decision-making requires no compromise with the facts. We, however, give the assurance that these "Facts" will manifestly be justified by the "Figures".

We trust the reader will find this new approach more useful and remain open to comments and suggestions for improving the effectiveness of this publication.

The Board acknowledges the continued assistance of STATIN, the Data Bank of the Ministry of Agriculture, Trade Board Ltd, The Jamaica Dairy Farmers' Federation Ltd, Jamaica Livestock Association Ltd, Nestle' JMP Ltd, Serge Island Farms/Dairies Ltd and other agencies which have continued to provide much of the data used in this publication.

Paul Jennings, PhD

Chief Executive Officer
December 09, 2005

TABLE OF CONTENTS

	Page
PREFACE	ii
TABLE OF CONTENTS	iii
LIST OF TABLES.....	v
LIST OF FIGURES	vi
1. JAMAICA DAIRY DEVELOPMENT BOARD	1
<i>1.1 Activities of The Dairy Development Board</i>	<i>1</i>
2. STATUS OF THE DAIRY SECTOR	2
2.1 <i>Overview</i>	<i>2</i>
2.2 <i>Imports of Milk Solids</i>	<i>7</i>
2.3 <i>Trends In International Prices Of Milk Solids</i>	<i>10</i>
2.4 <i>Consumer Expenditure On Milk Solids</i>	<i>11</i>
2.5 <i>Value Of The Industry</i>	<i>14</i>
2.6 <i>Levels Of Export Of Dairy Products</i>	<i>17</i>
2.7 <i>Local Milk Production</i>	<i>19</i>
3. COST OF PRODUCTION OF MILK IN JAMAICA IN YEAR 2004	20
ABSTRACTS AND SUMMARIES	26

ANNEXES	33
Annex 1. Annual Imports (Consumer Goods).....	34
Annex 2. Value Of Annual Imports (Consumer Goods).....	34
Annex 3. Annual Imports (Raw Material).....	35
Annex 4. Value Of Annual Imports (Raw Material)	35
Annex 5: Aggregate Import Duties and GCT Collected On Milk And Milk Products (\$US)	36
Annex 6. Grade "A" And "B" Milk Production	37
Annex 8. Stamp Duties On Dairy Products.....	38

LIST OF TABLES

Page

Table 1: Annual Volume of Imports of Milk Solids – 2000-2004 (kg)	6
Table 2. Annual Imports of Milk Solids by Value (US\$).....	7
Table 3. Changes In Volume, Value And Imputed CIF Of Milk Powder Imports 2003/2004.....	8
Table 4. Declared end use and duties collected on major dairy imports – 2004	9
Table 5: Mean Per Capita Expenditure (J\$)On Selected Dairy Products. – 2004	13
Table 6. Changes in Consumer Demand for milk solids - 2004 v 2003.....	13
Table 7: Annual Exports Of Dairy Products.....	18
Table 8: Comparison Of Variable Cost/litre Between Farm Sizes ¹	22
Table 9: Comparison of Average Direct Cost Year 2000-2004	22
Table 10. Comparative Farm-gate and Retail Prices of Milk Jamaica vs USA.	23
Table 11: Comparison Of Average Gross Margin/litre Among Farm Sizes	24
Table 12: Comparison of Proportion (%) Of Variable Cost Due To The	25
Various Input Categories over the Past Five Years.	25

LIST OF FIGURES

	Page
1. Sources Of Milk Solids	4
2. Dairy Product Imports	5
3. Trends in International Prices of Milk Powder (2000-2004)	11
4. World Milk Powder Prices Yr 2004.....	12
5. Mean Annual Per Capita Consumption Of Dairy Products	16
6. Milk production 2000-2004	20

1. JAMAICA DAIRY DEVELOPMENT BOARD

The Jamaica Dairy Development Board is embarking on its sixth year of operation. Within the past year the Board assumed a more proactive *modus operandi*, leading and participating in a number of initiatives at the policy and strategic levels primarily to catalyse the redevelopment of the Dairy Farming sector. Major initiatives included:

- Conduct of a Demographic Survey of Dairy Farms as a means of updating the database on the sector to aid effective planning.
- Undertaking a comprehensive review of the Dairy Sector and developing recommendations for achieving sustained competitive advantage
- Development and submission of a proposal for the reform of the tariff regime for milk solids. The proposal extends the 1997 recommendations of the COMSEC study with a proposal for the adoption of a Tariff Rate Quota Regime for powdered milk following clearance by the Ministry of Foreign Affairs and Foreign Trade with respect to the WTO-compliance of such a measure.
- Preparation and submission of a proposal for the Refinancing of the Milk Marketing Project of the Jamaica Dairy Farmers' Federation based upon the guarantee of a market for milk through the National School Feeding Programme.

1.1 Activities of the Dairy Development Board

In keeping with its mission of making the dairy sector globally competitive on a long-term sustainable basis, the Board continues to seek to:

- Promote the interest of the dairy sector and assist in its development;
- Increase efficiency in production and marketing;
- Ensure a level playing field for all the players in the sector;
- Promote policy, planning, analysis and monitoring the growth of the dairy sector through collecting, analysis and dissemination of reliable statistics.

In addition to the initiatives listed above, other major activities for the year 2004 included:

- Publication of Dairy Facts and Figures 2003/2004
- Staging of Dairy Farmers Seminar in conjunction with the Jamaica Livestock Association
- Conduct of Cost of Milk Production Survey 2004
- Continuation of study to determine the on-farm Cost of Producing Grass at WINDALCO's Manchester Pastures Dairy
- Developing proposal For Restructuring The Dairy Board for Greater Effectiveness in promoting the revitalization of the Farm Sector
- Tracking of Local and International Trends In Dairy Markets
- Collaboration With Ministry Of Agriculture Research and Development

2. STATUS OF THE DAIRY SECTOR

2.1 Overview

The vulnerability of the local dairy farm sector was further exacerbated by the passage of Hurricane Ivan in September 2004. The result was a further decline in local milk production to a 20-year low of 15.4 million litres.

It is expected that the hurricane will have telling negative residual effects on the medium term recovery of the sector as in its wake there was significant liquidation within medium sized herds; a reported 570 mature females having been sold for slaughter.

The medium term prospect for the revitalization of the sector will be heavily influenced by Government's intervention policies as the accelerated increases in the price currently offered for slaughter stock is apparently viewed by many small and medium sized farmers in particular, as an opportunity to curtail a protracted period of losses by exiting at minimum cost.

A stabilization programme led by the Government of Jamaica is urgently required as it is felt by many that current herd numbers are fast approaching minimum critical mass.

A demographic survey of cattle farms undertaken by the Dairy Board between March-May 2004 highlighted the severe attrition, which has taken place within the sector since 1990. Primarily driven by the exodus of small and medium scale farmers (64% decline in numbers of farms), the size of the national breeding herd fell 15.6 percent over the 14-year period to 11,440 females in 2004 and has fallen further since. Focus will need to be given to incentive programmes to encourage expansion among the large dairy farms, which represent the stable core of the industry, as the basis for any recovery of the small and medium sized sector which historically have made significant contribution to rural socio-economic development, social mobility and stability.

Critical to this will be a rationalization of food import policies so that the weakened local productive sector is not obliterated by imports of milk solids, which reached a 20-year high of 21,317 metric tons in 2004 at an expenditure of foreign exchange equivalent to J\$2.9 billion (US\$47.54 million). In contrast returns at farm gate totalled J\$308 million.

Figure 1: Sources Of Milk Solids

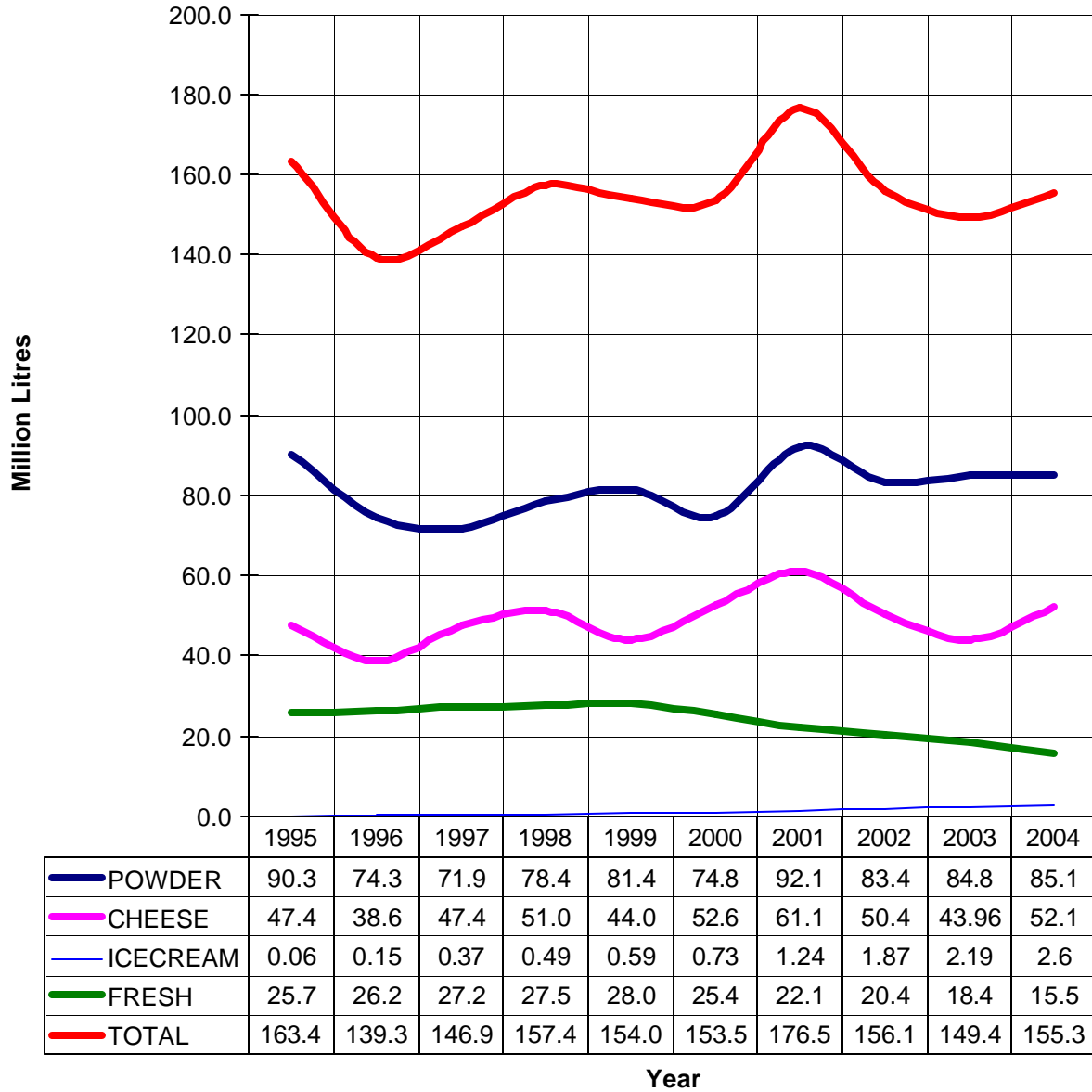


Figure 2: Dairy Product Imports

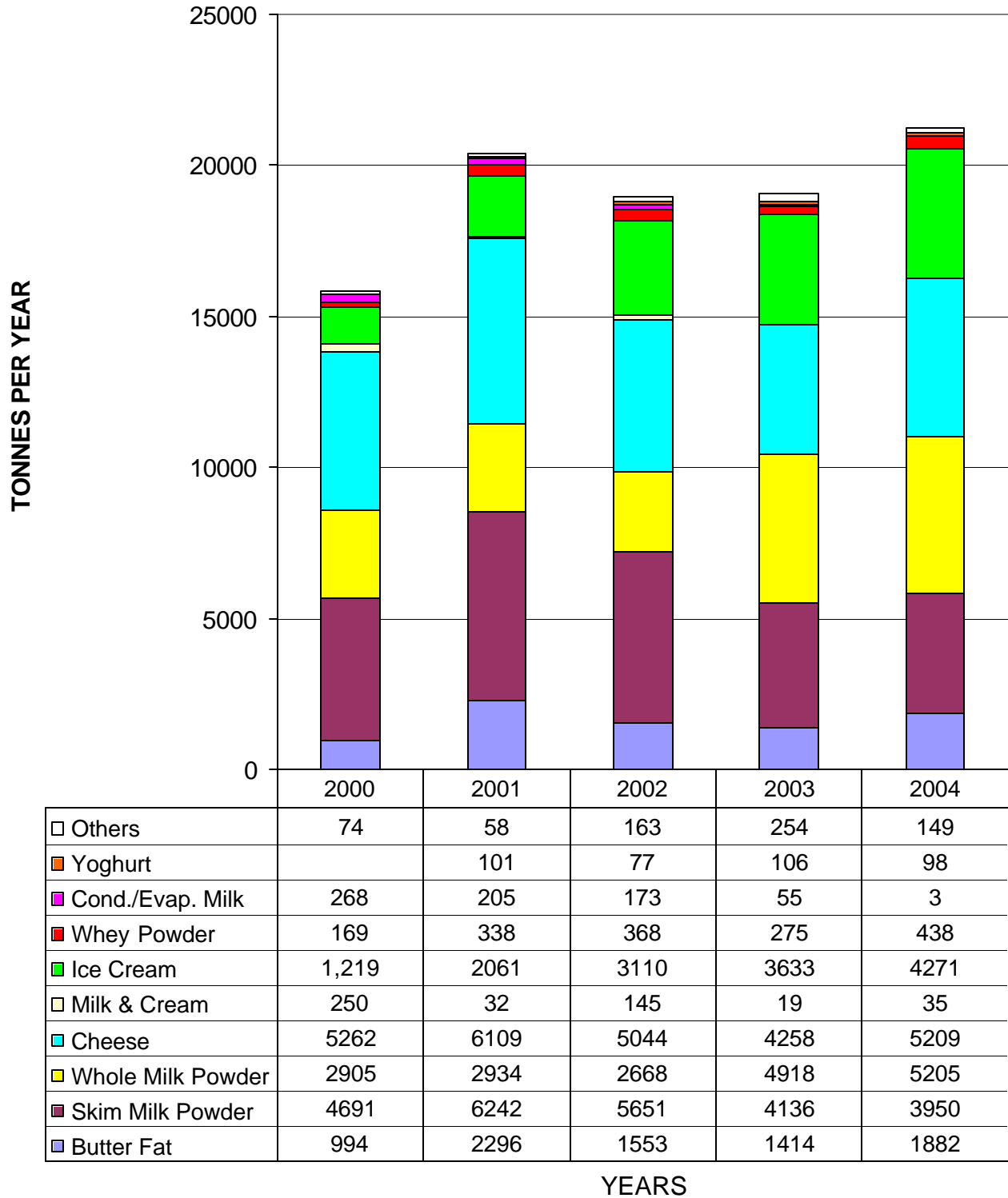


Table 1: Annual Volume of Imports of Milk Solids – 2000-2004 (kg)

Product	2000	2001	2002	2003	2004
Milk & Cream	249,881	31,719	145,192	19,167	35,017
Skim Milk Powder	4,691,927	6,241,947	5,650,822	4,135,532	3,950,073
Whole Milk Powder	2,904,849	2,933,666	2,668,064	4,917,873	5,205,253
Condensed/Evap	267,836	204,667	172,987	55,312	2,509
Whey Powder	169,211	337,678	367,726	275,387	438,398
Ice cream	1,219,198	2,061,170	3,110,243	3,632,825	4,270,787
Yoghurt	n/a	100,698	77,435	106,379	97,543
Cheeses	5,262,478	6,108,772	5,044,332	4,257,946	5,209,435
Butter Fat	993,632	2,296,295	1,553,113	1,414,346	1,882,218
Others	73,625	57,834	163,038	253,927	149,339
Total (kg '000)	15,832.6	20,374.4	18,952.0	19,068.7	21,240.5

Source STATIN

Table 2. Annual Imports of Milk Solids by Value (US\$)

Product	2000	2001	2002	2003	2004
Milk & Cream	584,498	71,039	282,439	1,642	52,142
Skim Milk Powder	8,069,559	14,364,756	10,048,595	7,288,683	8,368,393
Whole Milk Powder	5,440,283	6,775,969	4,480,202	9,784,043	10,975,582
Cond/Evap Milk	353,869	492,294	240,005	83,885	2,267
Whey Powder	131,163	500,485	269,375	412,946	638,120
Ice Cream	2,562,182	3,952,259	5,455,626	5,527,857	5,774,270
Yoghurt		237,009	204,968	273,466	236,116
Cheeses	14,354,568	17,235,078	14,881,634	12,458,009	16,191,118
Butter Fat	1,654,174	4,546,202	2,713,621	2,765,396	4,893,110
Others	124,743	161,222	348,619	551,120	414,513
Total (US\$'000)	33,275.0	48,336.3	38,920.0	39,147.0	47,545.6

Source: STATIN

2.2 Imports of Milk Solids

Dairy product imports in 2004 represented (by volume) an increase of 4.6 percent above the previous peak of 20,374 metric tons recorded in 2001. In comparison to the previous year, 2004 imports represented an increase of 11.8 and 21.5% in volume and value (US\$) respectively, the disparity in rates of increase between volume and value indicative of the significant increases in international prices for traded dairy products.

The most significant contributors to the increased volume of imports were butterfat & oil (+0.33), cheese (+0.25); ice-cream (+.18) and whole milk powder (+0.06), the latter in apparent compensation for a 4.5% decline in the level of SMP imports compared to 2003.

Table 3. Changes In Volume, Value And Imputed CIF Of Milk Powder Imports
2003/2004

	Skimmed Milk (SMP)			Whole Milk (WMP)		
	2003	2004	Change	2003	2004	Change
Volume (t)	4135	3950	- 0.045	4918	5205	+0.058
Value (US\$ ⁰⁰⁰)	7289	8368	+ . 148	9784	10976	+0.122
Imputed CIF (US\$/t)	1763	2119	+ . 202	1989	2109	+0.060
Reported FOB* (US\$/t)	1760	2100	+ . 193	1810	2200	+ 0.215

* Source USDA – FAS (Dec. 2004)

The continued substitution of SMP by WMP, a reversion to the pattern which prevailed following trade liberalization in 1992, remains an anomaly given that international FOB prices of WMP have consistently been reported at margins of US\$50-100/ton above those of SMP.

The imputed CIF costs, however, indicate that WMP was landed in 2004 at prices marginally lower than those of skimmed milk powder.

The end-use of imported milk powder as declared to Customs (Table 4) indicate that in respect of total dairy imports 38 percent of these were intended for direct consumption. With regard to powdered milk 22.5% were intended for direct resale; 3.5 percent of skimmed milk powder and 39.6 percent of whole milk powder. This suggests that in total 6951 metric tons of powdered milk were channelled into manufacturing, the equivalent of 67 million litres of fluid milk. With condensed milk representing by far the major manufacturing end product of milk

powder imports with annual outputs below 16,000 tons, the declared end usesages indicate the need for effective audit by The Customs department as a means of offering greater protection to the local dairy farm sector.

Table 4. Declared end use and duties collected on major dairy imports – 2004

	Consumer Goods			Raw Materials		
	Volume (t)	Value (US\$ ⁰⁰⁰)	Duties paid (US\$ ⁰⁰⁰)	Volume (t)	Value (US\$ ⁰⁰⁰)	Duties paid (US\$ ⁰⁰⁰)
Milk&cream	0.740	2.47	1.853	18.2	22.4	16.820
SMP	137.6	264.3	13.615	3812	8104	418.668
WMP	2066	4569	47.415	3139	6407	2159.5
Cond/Evap	2.512	2.35	5.853	-	-	-
Yoghurt	94.0	223.6	44.367	3.56	12.49	4.619
Ice cream	3441	4680	455.399	829.8	1094	95.286
Whey	75.0	54.24	0	363.4	583.9	0
Butter	719.5	1739	164.587	1163	3154	21.235
Cheese	1411	5252	224.112	3798	10939	53.853
Others	93.3	184.1	15.565	72.1	257.6	7.749
Total	8041	16971	907.14	13199	30574	2777.2

This in addition, would have a positive effect on Government revenues, duties collected from milk powder imported in 2004 (US\$2.639M) representing only 13.6 percent of the declared CIF value of imports.

In collaboration with the Jamaica Dairy Farmers' Federation the Dairy Board had earlier proposed a review of the existing tariff regime and had recommended, *inter alia*, the adoption of a Tariff Rate Quota mechanism which would stimulate increased use of locally produced milk by the manufacturing sector. The foregoing highlights the need for this proposal to be revisited.

2.3 Trends in International Prices of Milk Solids

Annual mean milk powder prices increased by 19.3 and 21.5% respectively for skimmed (SMP) and whole milk powder (SMP) respectively compared to mean 2003 prices (Figures 3&4). Closing European prices for 2004 were US\$2400 and \$2500 respectively, \$500 per tonne higher than December 2003 prices in either case.

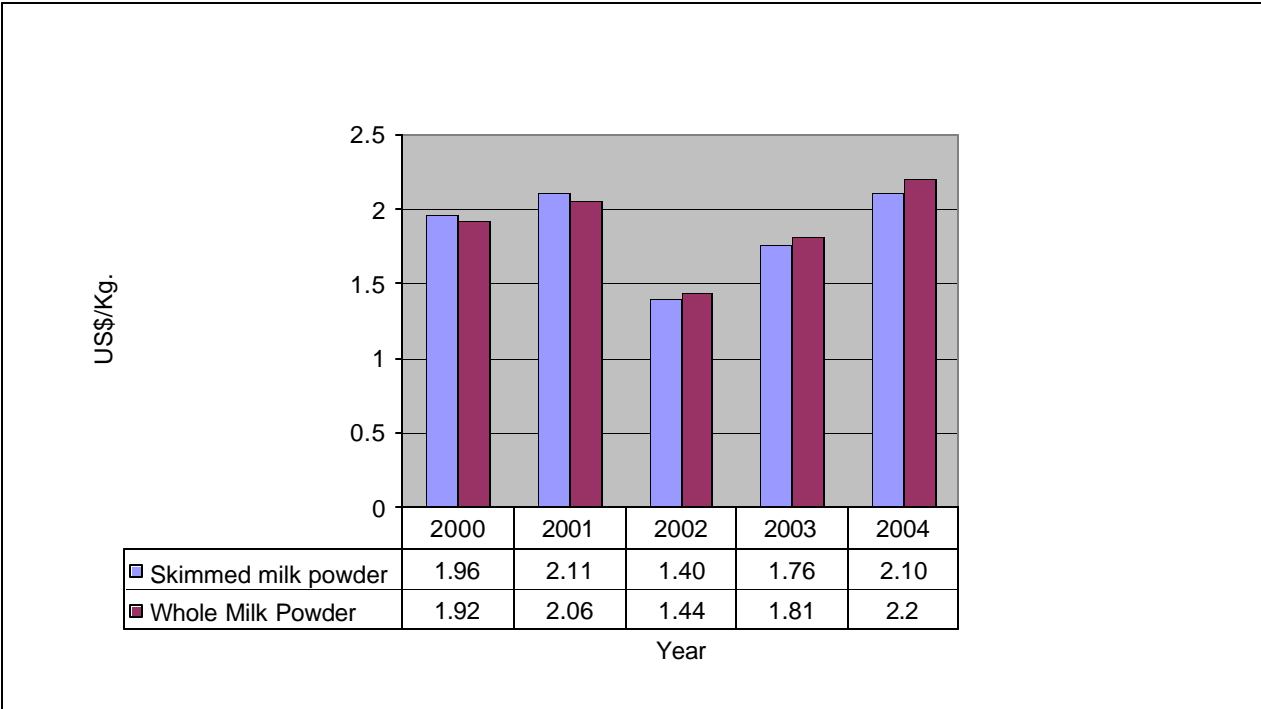
There was a general acceleration in the international prices of all the major traded solids, led by cheese which closed the year at US\$3100, the highest price since 1979 and 24 percent higher than year end 2003.

Major contributors to the continuing hardening of dairy product prices were:

- The demand supply imbalance strongly influenced by the first decline in milk production in New Zealand since 1989 and the slow recovery in output from Australia following the droughts of two years earlier.
- Unprecedented growth in imports of cheese and whole milk powder over the past five years influenced by the strong demand by non-traditional dairy consumers such as China.
- Depreciation of the US dollar relative to the Euro and other leading currencies.

The prospects for the near-term are for the continuing hardening of prices given the continuing record growth rates in the emerging economies and the sluggish forecasted rates of increase in supply from the major producers.

Figure 3: Trends In International Prices Of Milk Powder (2000-2004).

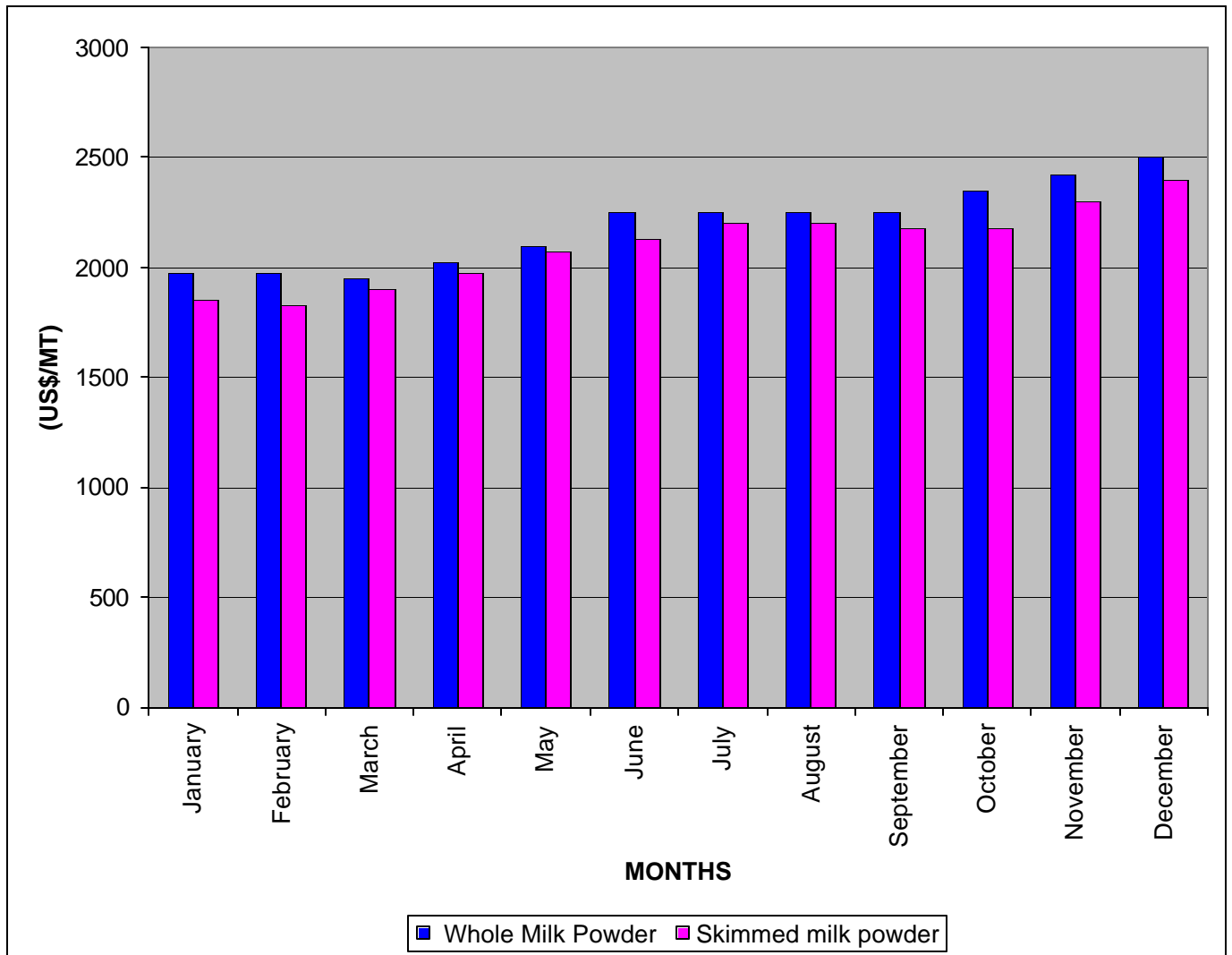


Source: USDA/FAS

2.4 Consumer Expenditure on Milk Solids

Mean per capita expenditure on dairy products in 2004 was J\$2825, nominally an increase of 7.8 percent above that found by the STATIN/PIOJ Survey of Living Conditions for 2003 (Tables 5&6). Adjusting for the inflation rate of 13.7% for 2004, indicates a fall of 5.2 percent in real expenditure between both years (\$2620 v \$2485).

Figure 4: World Milk Powder Prices Year 2004



Source: USDA/FAS

Table 5: Mean Per Capita Expenditure (J\$)On Selected Dairy Products. – 2004

Product	Jamaica	KMA (N=1741)	Other Towns (N=1297)	Rural Areas (N=4071)
1. Liquid Milk inc. flavoured	288.98	404.47	328.05	200.90
2. Condensed/Evap. Milk	726.56	794.14	810.03	650.84
3. Food Drink (inc Lasco Supligen Nutrament)	579.93	766.63	575.50	464.52
4. Powdered Milk	347.48	304.76	221.68	424.48
5. Butter or Margarine	206.03	236.92	219.74	181.17
6. Cheese	309.87	366.07	399.19	238.96
7. Other Dairy Products (yoghurt, ice cream)	366.44	511.76	405.20	259.76
Total	2825.28	3384.75	1901.83	2420.63

N= number of household members

Source: STATIN SLC (2004).

Table 6. Changes in Consumer Demand for milk solids (2004 v 2003).

	2003	2004	Change in Real Expenditure
Liquid milk	253.60	288.98	+0.002
Cond/Evap.	707.61	726.56	-0.097
Food Drink	585.26	579.93	-0.129
Powdered Milk	257.40	347.50	+0.187
Butter	256.50	206.00	-0.294
Cheese	268.29	309.90	+0.016
Other (incl. Ice cream, yoghurt)	291.75	366.44	+0.105
Total	2620.5	2825.0	-0.05

Source: STATIN SLC (2003, 2004)

The data in Table 6 might be indicative of the relative price- elasticity of demand for the several dairy products. They demonstrate, however, an attempt by the Jamaican consumer to rationalize expenditure on dairy products and might be useful in pointing the direction in relation to appropriate product diversification strategies by the local dairy sector.

Per capita consumption of milk and other dairy products across quintile groups continued to display the uneven pattern of consumption of these, most basic of foods. Among the wealthiest quintile, per capita expenditure on dairy products outstripped that by the poorest by a factor of 4.4. The situation is hardly improved when the comparison is made with the poorest 40 percent of the population (mean per capita expenditure - \$1555.50). In terms of equivalent purchasing power, the annual expenditure by the poorest 40 percent of the Jamaican population, would have bought 22.8 litres of fresh milk at retail prices prevailing in 2004 (\$68.00/litre) equivalent to a daily consumption of 62.5 millilitres. This clearly speaks to a need for state intervention through the Government's Safety Net Programme. The School Feeding Programme represents, perhaps, the most cost-effective avenue for amelioration.

Overall, expenditure on dairy products was equivalent to 7.0% of total per capita expenditure on food compared to 7.8% in 2003 and might be indicative of the higher escalations in the price of dairy products relative to other foods.

2.5 Value of the Industry

If the reported per capita expenditure of \$2825 is adjusted for expenditure on 'meals away from home' (+0.26) this translates to a total industry turnover of approximately J\$9.43 billion, an 8 percent growth in contribution to GDP compared to 2003.

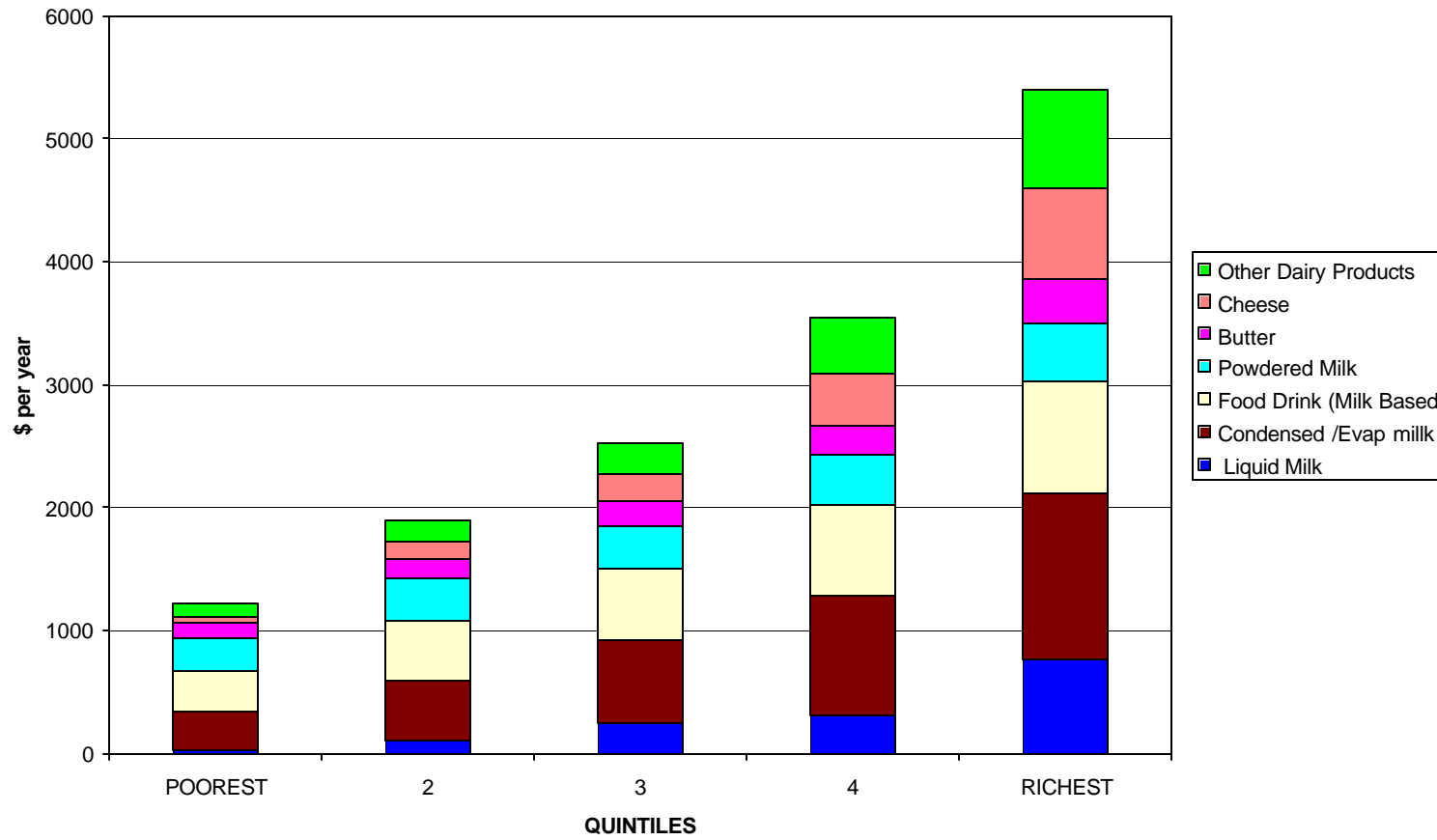
This turnover has to be evaluated against imports valuing \$2.91 billion and farm output valued at \$308 million and is indicative of the exorbitant margins prevailing in a food trade, which is predominantly non-manufacturing.

Per capita consumption of milk solids in 2004 was equivalent to 160 millilitres, 20 percent shy of the WHO standard (200 ml), but an improvement over the 154 ml calculated for 2003.

If the nutritional vulnerability of a significant segment of the Jamaican population is to be minimized, it will require a rationalization of margins in the food trade as characterized by the situation in respect of the trade in milk and dairy products.

It has been suggested that improving consumer awareness and sophistication through effective dissemination of information by agencies, such as the Consumer Affairs Commission will force the required rationalization by the trade.

Figure 5: Mean Annual Per Capita Consumption Of Dairy Products



2.6 Levels of Export of Dairy Products

Exports of dairy products increased only marginally (2 percent) in volume in comparison to 2003 but earnings declined by 13.5% over the same period. The decline in export of cheese recorded in 2003 continued into 2004 (-5.6%) resulting in a reduction of export earnings from this product by 14.7 percent.

This might have been influenced by the continued increase in international prices making the local product less attractive to its traditional niche market sustained by the Jamaican Diaspora.

There was significant recovery in exports of condensed milk though export volumes in 2004 represented only 22 percent of the level reported for 2001.

Table 7: Annual Exports of Dairy Products

Annual Exports of Dairy Products (kg)					
	2000	2001	2002	2003	2004
Milk & Cream	0	624,014	270,877	431,582	135,183
Skim Milk Powder	9879	0	0	8,413	567
Whole Milk Powder	298500	17	201	46,178	51,094
Condensed/ Evap Milk	0	2,372,481	326,410	36,900	525,336
Whey Powder	198315	0	0	0	0
Ice Cream	206759	38,242	1,909	264	380
Cheeses	611788	891,015	1,235,793	946,988	893,703
Butter Fat	191	51	628	248	1,331
Others	611788	0	0	103,375	0
Total	1,937,220	3,925,820	1,835,818	1,573,948.	1,607,594
Value Of Annual Exports (US\$)					
	2000	2001	2002	2003	2004
Milk & Cream	0	885984	395,772	581,394	154,112
Skim Milk Powder	12652	0	0	4,989	3,738
Whole Milk Powder	367996	75	1,336	209,107	7,664
Condensed/ Evap Milk	0	2947696	478,551	440,036	751,053
Whey Powder	564990	0	0	0	0
Ice Cream	655201	113423	5,088	2,474	800
Cheeses	2606557	4346437	4,775,212	5,021,585	4,285,264
Butter Fat	250	218	3,054	340	1,780
Others	2736439	0	0	154,613	0
Total	6944,085	8,293,758	5,659,013	6,018,506	5,204,411

Source: STATIN 2004

2.7 Local Milk Production

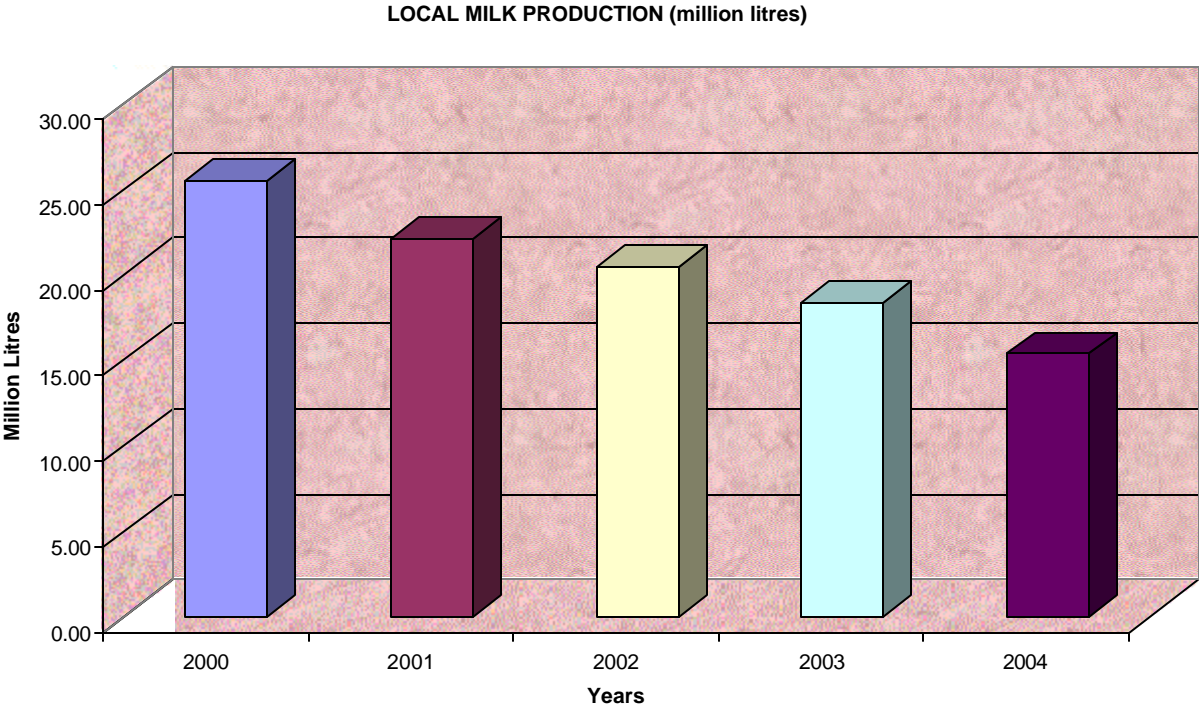
Influenced mainly by the passage of Hurricane Ivan, which led to a 40-percent fall in production during the last quarter, milk production in 2004 fell to a 20-year low of 15.4 million litres (Figure 6). Small-farm production, as reflected in the deliveries of Grade B milk was, perhaps, hardest hit falling to 462,000 litres, 37 percent below the 2003 level, more than twice the decline (0.152) in Grade A deliveries to the processors.

There is an urgent need to build on the earlier initiatives by NESTLÉ JMP through the development of a network of strategically located milk collection centres, not only to improve milk collection, but also to facilitate eligibility for Grade A classification of milk delivered by the small farmer, given easier access to chilling facilities.

The negative residual impact of the hurricane continued to be felt well past the last quarter of fiscal 2004/2005 as up to the end of March 2005 reports from farms indicate that they were yet to recover their pre-Ivan levels of output. Given that the prolonged cost: price imbalance which has prevailed since 2002 and the unfortunate under-nutrition of cows on many farms as well as the removal of over 550 otherwise productive females from the milk line as slaughter cattle, milk production is not expected to substantially improve during calendar 2005. However, the improvements in the price offered by processors since December 2004 has sparked a return to improved pasture and general nutritional management as well as herd expansion on some of the larger farms which are expected to have a positive impact in the short term. Positive signals such as the entry of a large corporate player into production and processing through acquisition and the

affirmation to immediate consolidation of its cattle farming operations by another are anticipated to spark a revitalization of the sector in the near-term.

Figure 6. Milk Production 2000-2004 (million litres)



(Source: Data Bank and Evaluation Division Ministry of Agriculture.)

3. COST OF PRODUCTION OF MILK IN JAMAICA IN YEAR 2004

The liberalization of the trade in dairy products since 1992 has posed a challenge to the local dairy sector to significantly increase its competitiveness. At current, international prices, (US\$2450/mt) milk powder, on a fluid equivalent basis, equates to approximately J\$15.20 per

litre. This compares with current farm gate prices off \$24.50 and average retail price for fresh milk of approximately J\$76.00 per litre.

While the retention of high levels of domestic support among the major exporting countries makes the challenge of competitiveness difficult, in order to improve market share, local dairy farmers will have to take the lead in reducing final costs to the consumer.

In order to catalyse the process of enhanced competitiveness, the Jamaica Dairy Development Board, has since 2000 initiated an annual survey of the cost of producing milk on Jamaica farms.

This report summarizes the findings of the 2004 survey and compares the results with those of the previous three years (Ffrench et al 2001, 2002, 2003).

The study revealed that irrigated farms continued to have higher cost of production; approximately \$27.25 per litre compared to \$19.81 on non-irrigated farms; a 27% advantage to non-irrigated farms (Table 8).

In the case of medium-sized irrigated farms, the numbers of cows in milk appeared to have been below the critical mass required to produce at a cost below farm gate price of \$20.00 per litre.

Table 8: Comparison of Variable Cost/litre Between Farm Sizes¹.

Category	Direct Cost/litre
SNI	7.69
MNI	19.43
MI	32.25
LNI	20.19
LI	22.14
Weighted Average	19.13

1. Average direct cost \$19.13; farmers margin \$0.87, contribution to fixed cost 4.5%. Total animal units recorded in survey were 5,083.

Source: Cost of Production per Litre of Milk in Jamaica in Year 2004 (Ffrench, D. L.; Miller, R. C.; Jennings, P.G.)

The prevailing circumstance may be attributed mainly to the levels of uncertainty facing the farmers, and their unwillingness to infuse the capital necessary to achieve profitability.

Table 9: Comparison of Average Direct Cost Year 2000-2004

ITEMS	2000	2001	2002	2003	2004
Average variable cost per litre J \$	15.91 (US\$ 0.34)	17.41 (US\$ 0.36)	17.02 (US\$0.35)	15.76 (US\$0.26)	19.13 (US\$0.31)
Irrigated farms	15.36	21.31	18.33	17.42	25.51
Small non-irrigated farms	8.00	12.34	12.21	16.81	7.69
Non-irrigated (M,L)	18.30	18.83	17.23	16.04	19.63
Price per litre	22.14	22.14	18.00	20.00	22.00
Percentage Contribution	28%	21%	6%	11 %	4.5%

Table 9 compares local farm costs over the 5-year period to 2004. For the similar period New Zealand (NZ) has reported costs between US\$0.12-0.18: their position among the lowest cost producers attributable to a knowledge-based reliance on pastures as, in the main, the sole source of feed. Jamaica, while not yet able to achieve those levels of nutritional efficiency, has seen significant improvement in dairy herd management and improved cost-competitiveness; costs in our surveys ranging from 0.26-0.34 US cents, well below those of the United States.

A comparison between Farm Gate and Retail prices in Jamaica and the USA is presented in Table 10 for 2003 and 2004. The data indicate that any strategy for stimulating local demand for fresh milk must begin with a rationalization of the *ex farm* margins prevailing in the trade.

Table 10. Comparative Farm-gate and Retail Prices of Milk: Jamaica vs USA.

	2003		2004	
	Jamaica	USA	Jamaica	USA
Farm Gate Price				
(J\$/L)	18.00	18.79	20.00	27.77
(US\$/L)	0.30	0.31	0.32	0.45
Retail Price				
(J\$/L)	68.00	49.10	71.37	55.54
(US\$/L)	1.12	0.81	1.16	0.90
Margin	2.78	1.61	2.57	1.00

The high levels of domestic support to their dairy sectors by the European Union and the United States, still continues, however, to suppress the growth of the local sector.

Gross Margins: The average gross margin per litre among the five designated groups (Table 11) speaks to the problem dairy farms are facing. Small and non-irrigated medium and large farms showed positive contribution margins but the large non-irrigated farms sampled would have been unable to cover their overheads. Organized irrigated farms are also having major difficulties. Medium irrigated farms must increase the ratio of cows in milk to achieve some level of profitability.

From the result of surveys carried out by the Dairy Board, a margin of \$6.00 is the optimal level that farmers should aim to achieve, e.g. 150 milking cows (80 percent of milking herd), A milk yield of 425,000 litres/year at current farm gate price, would have yielded a contribution margin of +\$2,250,000.00 and income before tax of approximately \$1.0 million.

Table 11: Comparison Of Average Gross Margin/litre Among Farm Sizes

Category	Stocking Rate (au/ha)	Gross Margin/litre
SNI	1.7	13.20
MNI	2.5	5.42
MI	5.6	-11.44
LNI	1.7	2.77
LI	2.9	0.97

Table 12: Comparison of Proportion (%) Of Variable Cost Due To The Various Input Categories over the Past Five Years.

Category	2000	2001	2002	2003	2004
Feed	31.53	39.3	32.	38	39
Utilities	6.42	5	4.7	7	7
Labour	17.8	21.7	26.3	21	13
Vet. & Med.	5.5	3.4	2.8	4	3
Pasture M'tce. & fertilizer	4.6	5.7	5.2	5	4

In retrospect, the last five years (Table 12) have seen farmers attempting various management strategies to control cost. It is worth noting that farmers were forced to hold surplus stock due to the poor market for both breeding stock and culls. This affected output per hectare negatively, especially during the period 2000-2001. Spiraling costs of concentrate feeds, the major component of variable cost and movements in the exchange rate from \$28 to \$40, which had significant impact on the cost of all inputs in fuel charges pushed production cost from J\$15.91 (US\$0.26) to J\$19.13 (US\$0.31) between 2003-2004 . The latter half of the period in review has seen a number of small and medium sized farmers exiting the sector; overall production falling to 15.4 m litres. As the major components of the variable costs become more challenging and the price paid for slaughter stock jumped significantly; this created a real temptation for many of the farmers.

In order to forestall any further decimation of breeding herds it will require Government intervention by way of a heifer acquisition and rearing programme, particularly aimed at minimizing the cost of re-entry by small and medium sized farmers for whom the increased prices offered at farm gate might prove sufficiently attractive.

ABSTRACTS AND SUMMARIES
OF
PRESENTATIONS AND PUBLICATIONS

YIELD AND NUTRITIVE VALUE OF AFRICAN STAR GRASS AND TIFTON 85 BERMUDA GRASS PASTURES ON COMMERCIAL DAIRY FARMS IN JAMAICA

Miller, R.C., Ffrench, D.L., McDonald, D.C.* and Jennings, P.G.
Jamaica Dairy Development Board, Ministry of Agriculture, Jamaica
*Research and Development Division, Ministry of Agriculture, Jamaica

In order to build awareness among Jamaican dairy farmers of the untapped nutritional and economic advantages of improved tropical grass pastures for internationally competitive milk production, the Jamaica Dairy Development Board, in 2001, initiated a series of site-specific evaluations of pastures as managed on commercial dairy farms.

The protocol involved the sampling of a representative paddock, pre- and post-grazing, for herbage dry matter yield and composition. The farms which have participated to date are Serge Island Farms Ltd. (SIFL), Seaforth, St. Thomas (April 2001- March 2003) and West Indies Alumina Company's (WINDALCO) Manchester Pastures Dairy situated near Williamsfield, Manchester (July 2003-present).

*The species evaluated at SIFL were African Star Grass (*Cynodon nlemfuensis*) and Tifton 85 Bermuda Grass hybrid (*Cynodon sp.*), while African Star was the sole cultivar at WINDALCO.*

Mean Net Herbage Accumulation (NHA) at SIFL was, respectively, 55.74 and 71.54 kg DM/ha/d for African Star and Tifton 85. Mean daily NHA during the first full year at WINDALCO was 56.90 kg DM/ha. Corresponding annual herbage dry matter yields were 20.35, 26.10 and 20.8t/ha.

N fertilizer application rates were 447 and 78 kg/ha/yr at SIFL and WINDALCO respectively.

Cost of producing the grasses were J\$528.50 (African Star) and J\$402.00 (Tifton 85) at SIFL and J\$470.00/t/DM at WINDALCO.

Mean crude protein (CP) / IVOMD values at SIFL were 140/583 and 134.5/580 g/kgDM for African Star and Tifton 85 respectively. Corresponding values for Star grass at WINDALCO were 171.3/569 g/kg. Applying standard published conversion equations, corresponding metabolizable energy values at both sites were 8.75 and 8.70 MJ/kg DM respectively for African Star and

Tifton 85 at SIFL and 8.51 on the WINDALCO Star grass. The results of gross energy determinations on a representative subset of the simulated grazing samples taken over the course of the evaluations, confirmed the validity of these estimates.

The results of to date, suggest that African Star grass and Tifton 85 are capable of supporting individual yields of 2500 litres per year without recourse to supplementary feeding. The 28 percent superiority in annual dry matter yield on Tifton 85 support the choice of this hybrid in any strategy aimed at maximizing carrying capacity and milk output per hectare, key elements in achieving sustained competitive advantage in the production of milk.

Full text available at www.moa.gov.jm

COST OF PRODUCING GRASS UNDER COMMERCIAL CONDITIONS IN JAMAICA

Miller, R.C., Ffrench, D. L. and Jennings, P.G
Jamaica Dairy Development Board

It has long been established that pastures provide the most economical source of feed for milk production. With the rising cost of imported concentrates the Jamaican dairy farmer, if he is to become competitive, must make better utilization of available resources. One such resource is pasture. Though the complete removal of concentrate feed from the diet is not being advocated, greater utilization of pasture presents the most convenient strategy for increased competitiveness for Jamaican dairy farmers.

*A two-year study was therefore carried out to determine the cost of producing pasture at Serge Island Farms in St. Thomas, Jamaica, commencing April 2001. Other objectives of the study were to determine dry matter yield, average dry matter consumption per cow and nutritive value throughout the year. Two grasses were studied namely: Tifton Bermuda grass (*Cynodon spp*) and African Star (*Cynodon nlemfuensis*).*

Pastures were fertilized at an average rate of 447.5kg N per hectare per annum. Grazing cycles were 18-21 days and stocking rate, 5.4 cows per hectare. Irrigation was applied for 86 days in 2001 and 35 days in 2002.

Mean dry matter yields of 26.1t and 20.76t per hectare per annum were recorded for Tifton and African Star respectively.

Mean daily dry matter intakes over the two years were 5.8kg and 3.8kg DM per cow, a superiority of 53 percent to the Tifton.

Cost per tonne of herbage dry matter averaged J\$402 and J\$528 for Tifton and African Star respectively, a 24 percent cost advantage to the Tifton.

The results suggest that Jamaican farmers are capable of producing grass at approximately 1/30th the current cost of concentrate feed and stresses the need to maximally exploit the proven potential of tropical pasture for producing milk in the pursuit of international competitiveness.

Paper presented at the Scientific Research Council's Seventeenth Annual National Conference on Science and Technology, November 19-22, 2003.

**MANAGING DAIRY CATTLE FOR INTERNATIONAL COMPETITIVENESS
IN UNFAVOURABLE ECONOMIC ENVIRONMENTS**
**A Strategy for Developing Sustainable Competitive Advantage in Milk
Production in Jamaica**

P.G. Jennings
Jamaica Dairy Development Board

SUMMARY

The local production of milk has declined to 15.4 ml in 2004; 60 percent below the peak attained in 1992. This decline in output has resulted from substantial exit from the sector since 1990 by a majority of small and medium scale producers; 64% of these farmers having retreated from the formal milk market. Associated with this severe attrition has been a significant down turn in the demand for proprietary feeds for dairy cattle, fertilizers and other ancillary goods and services. The principal factors which have impacted negatively on the demand for fresh milk have been identified as:

- i) The influx of imported milk solids, particularly powdered milk, which followed liberalization of the dairy trade in 1992. This in tandem with the simultaneous massive devaluation of the Jamaican dollar and subsequent prolonged high rates of inflation severely eroded consumer purchasing power.*
- ii) The retention, in contravention of the GATT and WTO accords, of massive levels of domestic subsidies to milk producers in the main exporting countries; including high levels of export rebates.*
- iii) The absence, locally, of countervailing measures adequate to nullify the negative impact of dumped milk solids on the market for locally produced milk. The prolonged retention of a soft tariff regime for imported milk solids; this in spite of a WTO-agreed bound rate of 100% duty on Agriculture imports rendered the local sector unable to recover from the dislocations of 1992.*
- iv) Excessive trade margins on fresh milk, ex-farm, have served to reinforce the clear shift away from liquid milk by consumers. These trade margins have been driven by the introduction of the 'exclusive distributor' into the dairy chain as well as the ever-reducing capacity utilization at processing plants.*
- v) The vast majority of farmers, without any upstream integration into the market, were essentially helpless and hapless bystanders to the decimation of the market for their product.*

- vi) *In spite of the obvious shift away from the consumption of high-priced fresh milk, the opportunity was not grasped by the processing and manufacturing sectors to diversify into value-added products, such as ice cream and yoghurt, imports of which have grown phenomenally, since 1996.*
- vii) *As the initial link in the chain, local dairy farmers failed to influence any reduction in price through the non-adoption of appropriate and available technologies to enhance their ability to compete with artificially priced imports.*
- viii) *Local traders in imported milk powder, the principal substitute for fresh milk, were handed, carte blanche, the opportunity to build consumer loyalty by pegging their prices sufficiently below fresh milk to retain the market while appropriating to themselves the majority of the surplus intended, a priori, for the consuming public, by government's retention of a low-tariff regime.*
- ix) *As a consequence and in spite of the influx of milk solids commencing in 1993, consumption of milk and dairy products has declined 8% over the past decade; the poorest 40% of the population being even more marginalized with respect to minimum accepted standards of nutrition*

Given its high direct multiplier effect on the economy as well as its linkages with other key agro industrial sectors, local milk production remains a highly sensitive segment of rural economic activity. The potential returns per hectare and the actual gains realized by many producers accord dairy farming high priority in any policy for rural development.

A sufficiently broad knowledge base is currently available to support significant increases in efficiency and the achievement of real and sustained international competitiveness in the local production of milk. The factor central to Jamaican farmers attaining sustainable competitive advantage in the production of milk is identified as the increased utilization of pastureland. This in turn is highly dependent upon the level of fertilizers, particularly nitrogen, applied to grass pastures. This has enhanced the cost- focused strategy pursued by New Zealand in achieving cost leadership internationally. Given our superior natural endowments for the production of pastures, Jamaica's attainment of sustainable competitive advantage in milk production is limited only by the attitudes of all stakeholders to the obvious need for a paradigm shift in the conventional approaches to dairying at farm, manufacturing and marketing levels.

The recovery of the sector ought to be considered a national imperative, which will require effective coordination, and cooperation between government and all other stakeholders in overcoming the economic, geopolitical and technological hurdles to the achievement of sustained international competitiveness.

**CURRENT DEMOGRAPHICS OF THE JAMAICAN DAIRY FARMING
SECTOR:
ANALYSIS OF A 2004 SURVEY**

P.G. Jennings, R.C. Miller, D.L. Ffrench
Jamaica Dairy Development Board
and
M. A. Pryce
Data Bank and Evaluation Division, Ministry of Agriculture

SUMMARY

A survey of commercial dairy farms was carried out between mid-March and mid-June 2004 to determine the current parameters of the dairy farming sector.

Farms were designated small (<10 ac) medium (> 10-99 ac) or large (>100ac) based on the area of land allocated to the dairy enterprise.

*The survey was designed to canvass **all** medium and large farms and **5 per cent** of small farms. A total of 76 farms were canvassed (7-small; 39-medium and 30-large) including one large farm engaged exclusively in heifer rearing and one medium operation which had suspended milking due to the effects of prolonged drought on herbage availability.*

*Based on information supplied by processors there are **185 small farms** currently engaged in dairy farming. On this basis there are currently 254 specialized dairy farms in operation occupying 18,200 acres (7375 ha) of land and carrying a total dairy herd of 18,511 head. These data suggest percentage reduction of 66 and 33 in respect of number of farms and land allocation respectively. With respect to the national breeding herd, a reduction of 15.6 per cent was indicated, the current breeding herd comprising 11,440 females.*

The data suggest that the overall mean yield on dairy farms was 3334 litres per hectare; medium sized farms the highest at 5690 litres per hectare per annum.

A computation of the current value of physical assets employed indicate that total investment in dairy farming is at minimum, J\$1.8 billion.

Report presented at JDDDB/JLA Dairy Farmers' Seminar, July 22, 2004, JLA Ltd. Kingston
Full text available at WWW.moa.gov.jm

ANNEXES

Annex 1. Annual Imports (Consumer Goods)

Annual Imports of Dairy Products (Kg)		
	2003	2004
Milk & Cream	19,428	740
Skim Milk Powder	297,054	137,685
Whole Milk Powder	712,362	2,066,353
Condensed/Evap Milk	55,403	2,512
Whey Powder	73,275	75,000
Ice cream	3,077,919	3,441,027
Yoghurt	106,750	93,981
Cheeses	1,081,223	1,411,446
Butter Fat	600,444	719,548
Others	114,848	93,328
Total	6,138,706	8,041,620

Annex 2. Value Of Annual Imports (Consumer Goods)

Annual Value of Imports (US\$)		
	2003	2004
Milk & Cream	19,534	2,472
Skim Milk Powder	554,527	264,306
Whole Milk Powder	1,596,242	4,568,667
Condensed/Evap Milk	83,787	2,352
Whey Powder	104,197	54,237
Ice cream	4,821,946	4,680,063
Yoghurt	274,357	223,628
Cheeses	3,664,132	5,251,818
Butter Fat	1,333,540	1,739,321
Others	305,950	184,065
Total	12,758,2157	16,970,929

Annex 3. Annual Imports (Raw Material)

Annual Imports of Dairy Products (Kg)		
	2003	2004
Milk & Cream	32	18,191
Skim Milk Powder	3,821,021	3,812,388
Whole Milk Powder	4,171,800	3,138,900
Condensed/Evap Milk	8,088	22
Whey Powder	202,112	363,398
Ice cream	636,860	829,760
Yoghurt	1,205	3,562
Cheeses	3,210,089	3,797,989
Butter Fat	843,490	1,162,670
Others	132,245	72,072
Total	13,026,942	13,198,952

Annex 4. Value Of Annual Imports (Raw Material)

Annual Value of Imports (US\$)		
	2003	2004
Milk & Cream	583	22,397
Skim Milk Powder	6,706,953	8,104,087
Whole Milk Powder	8,305,180	6,406,915
Condensed/Evap Milk	6,552	26.74
Whey Powder	308,749	583,883
Ice cream	871,865	1,094,207
Yoghurt	3,836	12,487
Cheeses	8,933,245	10,939,299
Butter Fat	1,490,677	3,153,789
Others	286,095	257,610
Total	26,913,740	30,574,701

ANNEX 5: Aggregate Import Duties and GCT Collected On Milk And Milk Products
(\$US)

	2000	2001	2002	2003	2004
Milk & Cream	19364	4460	137246	6910	16915
Skim Milk Powder	384709	682449	253582	140895	430881
Whole Milk Powder	2439932	2664223	1552140	1491458	2199804
Condensed/Evap Milk	54776	39327	41651	20295	5840
Whey Powder	0	0	0	0	0
Ice Cream	175275	336086	453954	542750	546108
Cheeses	195207	112138	220597	241478	277064
yoghurt		45824	40641	55415	44683
Butter Fat	0	180579	141993	145864	185150
Others	0	379932	22600	19249	23238
Total	3269263	4445018	2864403	2664315	3729683
Value of GCT Collected					
	2000	2001	2002	2003	2004
Milk & Cream	861	199373	4761	3801	3811
Skim Milk Powder	30253	199446	337	21120	96941
Whole Milk Powder	12231	314	81369	72713	370941
Condensed/Evap Milk	22130	9374	41169	9281	4904
Whey Powder	5489	8802	37651	19148	29608
Ice Cream	161416	319772	876850	930695	934082
Cheese	424018	154097	605909	695439	1054302
Yoghurt		40812	37339	49852	40487
Butter Fat	35100	394597	322441	309713	359754
Others	2217	25250	29536	30123	45007
Total	693715	1351837	2037363	2141885	2939837

Source: STATIN 2004

ANNEX 6. Grade "A" And "B" Milk Production

Year	Milk Production (litres)		Total
	Grade A	Grade B	
1999	24,889,571	2,593,762	27,483,333
2000	23,772,538	1,686,610	25,459,148
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

Annex 7. Stamp Duties On Dairy Products

Annual Stamp Duty (US\$)		
	2003	2004
Milk & Cream	438	275
Skim Milk Powder	73,399	143,712
Whole Milk Powder	76,954	112,973
Condensed/Evap. Milk	16,888	1,360
Whey Powder	5,617	9,030
Ice cream	86,757	96,539
Yoghurt	4,362	3,399
Cheeses	122,783	285,915
Butter Fat	38,685	71,114
Others	4,718	3,810
Total	430,606	728,127