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

Grove Place Agricultural Station,
West Indies Alumina Company,
Manchester, JAMAICA

Saturday, June 23, 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 as well as the pervasive international environment. Having analyzed these environmental constraints, the study assesses potential remedies within 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 in which 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. In this regard they were greatly assisted by an introduction to the CADIAC Approach, a participatory approach to value-chain alignment, by two IICA professionals.

The three key strategic objectives, critical to the redevelopment of a cattle sector severely weakened by its unpreparedness for adoption of a policy of a market determined economy; 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 spiraling cost of concentrate feeds, occasioned by the unprecedented surges in international grain prices, due to the increasing diversion of corn to bio-fuel production in the United States.

The analysis has, however, 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 that 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, focused on correcting the inherent defects of *laissez faire* market determined economic policy;

- ➢ The opportunities 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, the 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, investing it once again with the capacity to contribute, sustainably, to national food security, increased wealth creation and providing and protecting the livelihood of a significant sub-population, primarily of small farmers, who have experienced severe wealth depletion due to the forced attrition experienced by the sector, the result of the untrammeled ingress of heavily subsidized imports, from countries which view the protection of the livelihood of their own farmers as an imperative of public policy.

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 resources, the knowledge-driven approach critical to effective change agency in a post-modern environment.

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

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	**GOJ/BDPAJ**
2. Completion & restructuring Milk Marketing Project	***	***	*	High	**GOJ/BDPAJ**/JDFF
3. Central certified abattoir/meat processing facility with broad-based ownership	***	***	*	High	**GOJ**/BDPAJ
4. Expanded national school feeding prog.	**	***	***	Very High	**GOJ**/BDPAJ
5. Establish micro lending facility	**	***	***	Very High	**BDPAJ**/GOJ
6. Promote contract rearing by small farmers	***	***	***	Very High	**BDPAJ**/GOJ
7.Establishment of fodder farms	**	***	*	High	**BDPAJ**/GOJ
8. Industry specialization	**	***	***	Very High	**BDPAJ**/GOJ
9. Tariff rate quota on beef trimmings and milk powder	**	***	*	High	**GOJ**
10. Revamped cattle breeding strategy	**	***	***	Very High	**Breed Societies/ BDPAJ GOJ**
11. R&D on non-traditional feeds	*	***	*	Med	**GOJ**/BDPAJ
12. Competency certification	**	***	***	Very High	**GOJ**/BDPAJ

13. Grant-loan mix for pasture development	***	***	***	Very High	**GOJ/BDPAJ**
14. School Feed Prog. to drive prod. Diverscn.	***	***	**	Very High	**BDPAJ /GOJ**
15. Adoption of payment for milk on composition & quality	***	***	**	Very High	**BDPAJ/**GOJ
16. Mixed farming (tree crop/cattle)	**	***	***	Very High	**BDPAJ/GOJ**
17. Mixed species stocking (cattle sheep)	**	***	***	Very High	**BDPAJ/**GOJ (ASSP)
18. Affirmative action prog. for women & youth	**	**	***	Very High	**GOJ**/BDPAJ
19. Venture caoital to adopt/adapt 'share-milking'	**	***	***	Very High	**GOJ**/BDPAJ
20. Fast-track 'Emancipation Lands' Prog	***	**	***	Very High	**GOJ**/BDPAJ

Preface

There is growing optimism that the local dairy and beef cattle sub-sectors are poised for a return to their historical positions as stabilizers of the rural economy. The frequent recollections of the era when a 'few churns of milk' provided the assurance of secondary education or when the bulkin was slaughtered to send off a sibling to teachers college or "Farm School" represent, not mere nostalgia, but are also subliminal reinforcement of an intuitive assessment that the current socio-economic environment, virtually dictates the revitalization of the cattle sector.

The inherent structural weaknesses of the cattle sector rendered it particularly vulnerable to the, market-determined, economic policies, which have been applied as a universal panacea to the problems of development at the behest of the Multilateral Financial Bureaucracies, the gate-keepers to development financing assistance. The experience common to most developing countries has been one, or a combination of:

- Increased rural poverty as a result of the displacement of small farmer production, by imports, heavily subsidized at origin in the countries of the OECD:
- Decimation of native cattle populations resulting from displacement of local production by dumped imports
- Noticeable, growing social instability in once bucolic rural areas.

Major exceptions to this general trend, have been those countries which have consistently adhered to public policies, which promoted targeted levels of national food security; thus reaping the social and economic benefits from the protection of the livelihood of the large mass of resource poor farmers, for whom cattle represents, not only an assurance of protein nutrition, but also a store of wealth. Examples abound in South and South East Asia among which Thailand, Indonesia and Vietnam have sustained among the highest annual rates of growth in the production of milk, worldwide, over the past two decades (See Jennings P.G., 2006b).

Given its established tradition for excellent stockmanship and the invaluable advantage of four highly productive breeds of tropical cattle, the Jamaican cattle sector still possesses the basic attributes required for sustained recovery/redevelopment. This will, however, require the following:

- Reorganization of industry structure to enhance equity of opportunity to all stakeholders, not the least of which is the small resource-poor farmer;
- Revamping of public policy to create an enabling environment which will guarantee opportunities for wealth creation to all industry players;
- Adoption of a knowledge-driven approach to the redevelopment of the sector.

This report presumes to recommend, primarily, policy prescriptions for a revitalized cattle sector, possessed of the attributes required for enhanced sustainable competitive advantage. It stresses the imperative of an activist public sector working in close partnership with the broad spectrum of private sector stakeholders, through the agency of a strengthened Beef and Dairy Producers' Association of Jamaica (BDPAJ) which, during its still fledgling stage of development, thus far, has demonstrated the courage and capacity to apply itself to the task of sector reconstruction free of many of the encumbrances which have hamstrung many of the older 'kids on the block'.

Since 1999 the Dairy sub-sector has had the advantage of a (yet putative) Jamaica Dairy Development Board (JDDB) which has nonetheless been able to provide the information base to prompt rational decision making at both policy and strategy levels. The Beef sub-sector has not had the same level nor quantum of policy and information support. This report, prepared to commemorate the inaugural Annual General Meeting of BDPAJ, will hopefully provide a 'start in the right direction'.

I congratulate the members and the Directorate of BDPAJ and assure them of my continuing support.

Acknowledgements

This report would not have been possible without the intellectual and editorial support of Balteano Duffus of BDPAJ and Richard Miller of the JDDB; the access to current relevant information provided by Messrs Roy Higgins and Martin Brown and Miss Avery Gaynor of the Statistical Institute of Jamaica; and the proof-reading skills and unstinting personal support and encouragement of my wife, Marcia.

I hereby record my sincere thanks to them all.

Paul Jennings

May 16, 2007

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1. PREAMBLE

In an effort to ensure access to affordable nutrition by the Jamaican population, Jamaican governments, as is the case with many developing countries, have historically pursued a common 'cheap food policy'. Prior to the advent of WTO-directed globalization and the prepotent 'market determined' economic policies, successive administrations used strategies such as local subsidies to farmers and consumers as well as a variety of import restrictions to promote a balance between local production and imports. Consequent on our several balance-of-payment agreements with the multilateral financial bureaucracies and our subsequent accession to the World Trade Organization, these policy options have either been denied or substantially curtailed.

In contrast the member states of the OECD, from whence much of our food imports originate, have managed to keep their labrynthine networks of domestic support to Agriculture and food production, essentially intact for much of the 12 years since the establishment of the WTO; the world body established to direct and police global "free trade". The resulting trade distortions have had devastating effects on Agriculture and food production in many developing countries, not the least of which is Jamaica.

The volatility of the international markets for meat, milk and grain over the past three years has rendered nutrition policies based on imports, untenable, and 'cheap food'; a mirage. The unprecedented surges in the international prices of milk, beef and grain have been influenced by several interacting factors, viz.:

- The growing opposition of the populaces of the OECD member states to the heavy burden of taxation required to sustain their policies of domestic support to Agriculture;

- The sustained and ever-increasing demand for beef and dairy products from China and the other emerging economies resulting from the growing affection for 'western' diets with increasing consumer affluence;

- The diversion of increasing proportions of the US corn crop to bio-fuel production as that country diversifies its energy base;

- ❖ The persistence by the US administration, over much of the past seven years, with an ever-widening fiscal deficit, has resulted in a continuing devaluation of the US dollar against other world currencies, thus weakening the purchasing power of countries such as Jamaica, whose currencies are pegged to the dollar;

- ❖ The marked convergence of food prices on the world market, as the more efficient producers seek to reap economic rents.

Understanding the behavior of the international market for milk powder is salutary for countries such as Jamaica. From a closing 2002 price of approximately US$1700.00 per tonne, European milk powder prices (whole and skimmed) have soared to between US$4300-4900 as at the end of April last (USDA – AMS, April 24, 2007). While the current rate of increase is not expected to be sustained indefinitely, the supply gap is not expected to be filled in the near term, given the intrinsically slow response rate associated with milk production. The virtual depletion of buffer stocks of milk powder and other dairy products in the OECD countries, also suggests the unlikelihood of any significant, sustained price reduction. Additionally, any significant altering of the dairy product-mix is likely to trigger similar surges in the price of the other major traded milk products.

The upward trend in beef prices of the past two years, though less dramatic than is the case with milk, makes safeguarding the nutrition of the more vulnerable segments of the Jamaican population, a very tenuous proposition. Carcass prices, at a modal US$155.00 per hundred-weight (USDA – AMS, April 2007), represent a 40 percent increase above prevailing prices in 2004/2005.

Cognizant of the market opportunities emanating from these global trends, several positive responses have begun to emerge from among local stakeholders including:

- ➢ A clear commitment to the ‘long haul’, by stakeholders of the local cattle sector signaled at the Runaway Bay Conference/Workshop of mid-September 2005, when stakeholders espoused a common vision of a vibrant cattle sector, based upon a realignment of the value chain to ensure equity for all participants.

- ➢ The establishment in November 2005, of the Beef and Dairy Producers’ Association of Jamaica as the spearhead of the reconstruction and sustained redevelopment of the sector;

- ➢ The acquisition of the Serge Island complex by the Seprod Group and their immediate embarking on an expansion programme aimed at doubling milk production within the near-term.

- The signaling by the Jamaican Government of its acceptance of the initiative of the private stakeholders to engender a revamping of public policy on the cattle sector and its commitment to budgetary support.

- The recent vocal protests of small dairy producers in St. Mary is salutary in demonstrating the resilience of these farmers who were among the major casualties of the trade distortions of the post-liberalization era.

The turn-around of the local cattle sector and its sustained future development is a compelling national imperative, in the face of the clear threat to assured, acceptable levels of nutrition, as well as the protection of the livelihood of a significant constituency of Jamaicans. This paper attempts to delineate some of the key issues of policy, technology and market development, which are considered requisite to weaving the holistic approach necessary for the sustained redevelopment of this, once vibrant, sector of the Jamaican social and economic milieu.

2. UNDERSTANDING THE JAMAICAN CATTLE SECTOR

A 2005 study, commissioned by the Jamaica Livestock Association Ltd., ***The Current State of the Jamaican Cattle Sector*** (Duffus and Jennings, 2005 – www.jlaltd.com), characterizes the social and economic parameters of beef and dairy production in Jamaica as exists currently. With specific reference to the Dairy Sector a compilation by Jennings (2006) ***Livestock Production in Unfavourable Economic Environments: Strategies for Attaining Sustained International Competitive Advantage*** (BookSurge.com/amazon.com) focuses primarily on the dairy sector from the perspective of technological, strategic and policy options available for a sustained recovery of that sector. It also includes reference to potential technological solutions to the problem of the inherently low returns to suckler-herd beef production. The series of annual reviews published by the Jamaica Dairy Development Board since 2000, ***Dairy Facts and Figures*** (www.moa.gov.jm) presents a historical profile of the Dairy sector post-liberalization in 1992.

This presentation will therefore adopt a futuristic posture in attempting to utilize industry antecedents and current trends to chart a course for the medium- and long-term future of the Jamaican cattle sector.

2.1 What are Jamaicans Eating?

Jamaicans spent, on average, a nominal $52,467 *per capita,* on the consumption of food and beverages in 2005, this representing approximately 42 percent of total consumption expenditure (PIOJ/STATIN, 2006). Assuming a population of 2.65 million, *per capita* food expenditure translates to a

national market of approximately $139 billion. The combined market for meat, poultry and fish, as well as dairy products (excluding meals away from home), accounted for 28 percent of food expenditure; a gross turnover of $38.7 billion in 2005.

Data on *per capita* expenditure on beef and dairy products in 2005, were obtained from disaggregated data from the Survey of Living Conditions, courtesy of STATIN, and are shown in Table 1.

Table 1. *Per Capita* Expenditure ($J) on Beef and Dairy Products - 2005

Dairy		**Beef**	
Product	**Expenditure**	**Product**	**Expenditure**
Liquid Milk	348.3	Fresh/frozen	320.0
Condensed/Evap Milk	870.0	Canned, salted or preserved	113.0
Food Drink	872.3	Liver and Offals	194.1
Powdered Milk	397.5	Meals away from home (patties, fast food)[2]	3095.2
Butter/(margarine)	190.4		
Cheese	358.7		
Other (yoghurt, ice Cream etc.)	446.0		
Total	3483.1	Total	3722.3
Adjusted for 'meals away from home'[1*]	4493.2		
Est. gross turnover (J$B)	**11.91**	**Est. gross turnover**	**9.86**

1. Assumed to be directly proportional to the 29% expenditure on MAFH*
2. Expenditure of fast food estimated at 20% of expenditure on MAFH

The data suggest a domestic market of approximately J$22 billion for beef and dairy products. By contrast, local production of beef and milk in 2005, at 10.8 million kg and 14.5 million, respectively, implied a cumulative farm gate return of approximately $1.16 billion (5.3 percent of the total market), calculated at current prices; a return of approximately 11.6 percent on assets employed (Duffus and Jennings, 2005). This disparity ought to be correctly viewed as a tremendous opportunity for local primary producers to increase market share, particularly given the increasing international price competitiveness of local milk and beef.

2.2 Profile of the Domestic and International Markets

2.2.1 The Beef Sub-sector

Local beef production over the five-year period to 2006 is summarized in Table 2.

Table 2. Local Beef Production 2002-2006 (Kg'000)

	2002	2003	2004	2005	2006
No. slaughtered	63520	66532	52379	49624	28451
Dressed wt	11883	11429	8960	8659	5028
Edible offal	2377	2286	1792	1732	1005
Total carcass wt.	14260	13715	10752	10390	6031

Source: Data Bank and Evaluation Div., MAL

The table highlights the decimation of the cattle herd, post-liberalization; the decline over the past five years, a continuation of the slide commencing in 1992 when a total carcass yield of 18.21 million kilograms was recorded from over 80,000 head slaughtered. In fact, the number of animals slaughtered during the 2002-2005 period, is the result mainly of attempts by local producers to liquidate their herds, in the face of prevailing unfavourable prices. This is confirmed by the 55-percentage reduction in the number presented for slaughter in 2006, a year of unprecedented high farm gate prices. Anecdotal evidence, however, points also, to a resistance by the traditional major processors of local beef - the fast food trade - in the face of the ingress of low cost beef trimmings, essentially a throw-away residual product of the major beef producing countries. The data in Table 3 summarizes the beef import data accessed from STATIN for the period 2001-2005.

Table 3. Beef Imports 2001-2005 by CIF Value (J$ M) and Volume (Kg'000)

ITEM	2001		2002		2003		2004		2005(P)	
	Vol.	Value	Vol.	Value	Vol.	Value	Vol.	Value	Vol.	Value
Tenderloin	64.8	32.8	85.5	40.5	80.1	58.1	119.8	60.0	35.6	23.4
Sirloin	27.8	11.1	22.2	8.0	20.4	13.2	10.9	3.04	6.3	2.62
Mince	19.3	1.5	-	-	22.4	4.5	22.4	4.80	0.21	.019
Trimmings	49.5	4.6	87.4	7.3	142.8	20.3	750.1	101.3	267.2	40.5
Nesoi (f/f)	130.1	48.3	130.7	47.9	152.1	66.9	253.4	55.9	.087	.056
Other Cuts (f/f)	43.3	14.5	-	-	33.3	18.3	130.0	12.04	78.16	26.7
Liver	1255	49.1	1128	40.5	1453	72.9	686	51.4	329.3	14.8
Offal	4455	397	4085	406.2	3096	332.7	1622	210.8	747.8	87.6
Canned corned beef	2447	219	4290	381.7	4838	496.0	4626	601.0	1895	256.
Dried/salted /smoked	1.56	0.23	1.64	0.29	-	-	18.6	2.39	.550	.142
Total	**8493**	**778**	**9830**	**932**	**8364**	**7322**	**8239**	**1103**	**4463**	**452**

(P) Preliminary data

The data in Table 3 elicit several inferences, major among these being:

1. High-end cuts accounted for 2.5-3.0% of imports by volume and 12-14% by value;
2. Omitting the preliminary data for 2005, imports of beef over the past five years were at a foreign exchange cost of US$16.8-18.0 million;
3. Liver and offal represented between 28 and 67 percent and canned corned beef, 29 and 43 percent, by volume, of imports over the five-year period to 2005;
4. Trimmings have not only displaced mince as a raw material for the fast food trade, but might also have triggered the reported resistance to local beef by fast food producers;
5. Assuming that beef trimmings account for 20 percent of total carcass weight, import of trimmings in 2004 (750,100 kg) would have been equivalent to 1.26 times the equivalent reduction in trimmings due to the shortfall in local production (592,600kg) between 2003 and 2004 and arguably, might have triggered much of the slide in local production into 2006, given that the fast food trade accounted for as much as 70 percent of the off-take of beef in 2004 (Duffus and Jennings, 2005).
6. **The foregoing speaks clearly to the need for a tariff-rate-quota mechanism to provide a cushion to a renascent beef sector**.
7. At a local carcass value of $148.00 per kg ($35.00/lb live wt.), expenditure on the import of beef in 2004 (J$1.1B) would have been equivalent to 69 percent of the value of local production; from total import volume equivalent to 77 percent of local production. **This questions the validity of a *laissez faire* policy toward beef imports in an environment in which local beef is clearly cost-competitive on the basis of comparative gross values.**

2.2.1.1 The International Trade in Beef and Live Cattle

The incidence of BSE in the US in 2003, has seen the emergence of Brazil as the world's largest exporter of beef, surpassing Australia, which prior to 2003 was rivaled only by the US for world leadership in exports. Ironically, the US has remained the largest importer of beef during the period 2003-2006, followed by the Russian Federation; 2006 imports reported at 1.4 million and 955,000 tons respectively. It is instructive that in an increasingly sophisticated market, based primarily on highly differentiated cuts, Brazilian and Australian beef - predominantly grass finished - are the predominant imports.

Table 4 summarizes production and export of beef by the world's largest traders between 2003 and 2006 (USDA- FAS, April 2007).

Table 4: Beef Production and Exports by Main Producing Countries 2003-2006 ('000 t)

	2003	**2004**	**2005**	**2006**
Total Beef Production	50095	51327	52454	53838
Domestic consumption	49049	49875	50851	51725
Exports:				
Brazil	1175	1628	1867	2109
Australia	1264	1394	1413	1459
India	439	499	627	750
New Zealand	558	606	589	541
Uruguay	325	410	487	510
Argentina	386	623	762	556
Canada	383	557	551	440
EU-25	388	358	254	220
China	43	61	91	99
Mexico	12	18	31	38
United States	1142	209	317	523
Others	224	133	102	28
Total	**6339**	**6496**	**7091**	**7273**

Several important observations, with implications for domestic policy, may be drawn from Table 4, viz.:

- Beef production, with the exception of Oceania, is primarily geared for domestic consumption; on average 97 percent of the world's output being consumed *in situ.*

- World production, during a period of unprecedented demand growth, has increased at an annualized rate of 1.9 percent between 2003 and 2006. Corresponding rates of growth in pork and broiler meat production were 2.45 and 2.95 respectively.

- Exports, contemporaneously, have grown by 3.7 percent driven largely by the supply deficits in the Russian Federation, the United States and the European Union.

- Highest growth rates in beef production (average 5.2% per year) were recorded by three developing countries: Brazil, India and China, which along with Mexico also registered highest growth in exports, which ranged from 17.7% (India) to 54% (Mexico). These accord with the 2001 outlook on world milk and meat production posited by the World Bank (de Hahn *et al,* 2001) and the "Livestock Revolution" predicted by the FAO (2002) after Delgado *et al* (1999) and Delgado *et al* (2001).

With respect to the international marketing of beef there has been a definite move away from the international export of carcasses toward a more highly differentiated product. This has contributed to a marked convergence in international beef prices since 1980 (Jarvis *et al*, 2005). This convergence

has resulted, primarily, from the loss of market share for differentiated beef products by the United States, as other major producers moved away from marketing of beef as a commodity.

The increasing diversion of corn to bio-fuel production in the United States over the past three years has triggered a surge in the price of US grain-finished beef. The USDA *Livestock & Grain Market News*, at the end of last March, reported average dressed, steer and heifer prices of the order of US$154 per 100lb ($95.48 live); approximately 16 percent above the average price of the previous five years. Live feeder cattle futures for April, traded on the Chicago Mercantile Exchange at a range of US$96.40 to US$97.80, reflecting the continuing hardening in prices for US beef. It can reasonably be expected that prices from other suppliers will continue to mirror those of the US, as the more efficient grass-finishers in Oceania and South America continue to reap economic rents.

Given Jamaica's potential as an exporter of tropical cattle genetics it might be instructive to examine world trade in live cattle over the five-year period to 2006. USDA data on exports and imports of live cattle from selected countries are summarized in Table 5.

Table 5. World Trade in Live Cattle 2002-2006, Selected Countries ('000 head)

Year	2002	2003	2004	2005	2006
		Imports			
United States	2503	1752	1371	1816	2289
South Africa	145	130	145	210	140
Mexico	206	53	68	85	72
Philippines	120	100	55	25	26
China	11	50	132	50	15
World Total	**3707**	**2444**	**1902**	**2369**	**2839**
		Exports			
Mexico	948	1240	1375	1259	1275
Canada	1688	506	0	559	1032
Australia	972	774	638	573	637
Brazil	1	3	16	113	246
EU-25	509	475	435	323	290
New Zealand	11	18	69	50	32
United States	244	99	16	22	49
World Total	**5040**	**3572**	**2940**	**3182**	**3828**

Source: USDA-FAS, April 2007

It is difficult to disaggregate the data in Table 5 into the animal genetics or feeder stock components. However the following may be safely inferred:

1. The incidence of BSE in Canada and the USA between 2002 and 2003 has severely curtailed world trade in live cattle.

2. While live animal exports from Mexico and Canada are primarily feeder stocks entering US feedlots, the USA is primarily an exporter of cattle genetics.

3. Imports originating outside of the USA and Canada are primarily of cattle genetics, and have fallen from approximately one million to 459,000 between 2002 and 2006.

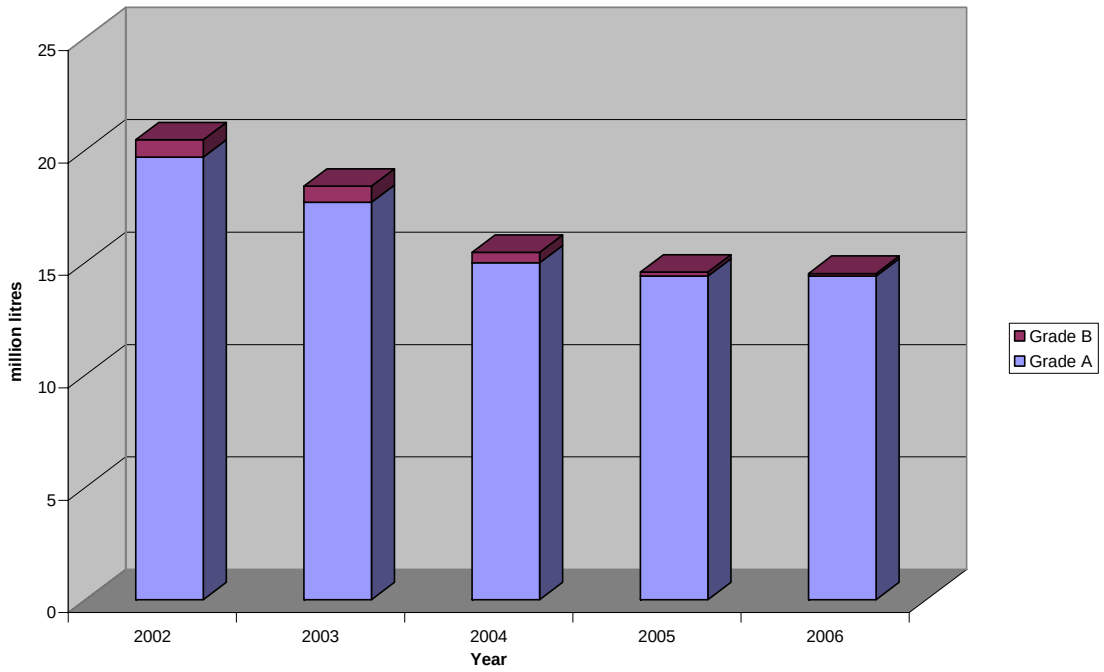
4. Countries such as Brazil and New Zealand have exploited market niches created by the curtailment of exports of cattle genetics from North America and the European Union. In fact New Zealand has exported over 2000 'Taurindicus' (crossbred) cattle primarily to Thailand and Indonesia, between 2003 and 2005 (Campbell, 2006).

The disruptions in the international market for cattle genetics, presents significant opportunities for Jamaica, with its four established breeds of tropical cattle. Jennings (2006) estimated, conservatively, that in the near term Jamaica Hope breeders stand to earn as much as J$100 million annually from the export of embryos, primarily to South Asia, the world's fastest growing dairy belt. Similar opportunities could be created for the Jamaica Red Poll, in niche markets for dual-purpose cattle in much of Latin America. The emergence of Brazil as an exporter of cattle genetics speaks to the export potential of the Jamaica Brahman, given that much of Brazil's exports are likely to be of Nellore cattle to other countries of the Latin American and Caribbean region. **There is, however, an urgent need to revamp the national approach to cattle breeding to place Jamaican cattle breeders in a position to exploit these opportunities.**

2.2.2 The Dairy Sub-sector

Local milk production showed signs of stabilizing between 2005 and 2006 at approximately 14.5 million litres (Figure 1.)

Figure 1. Milk Production 2002-2006



The chart highlights the declining trend in local milk production which has been characteristic of local milk production since 1992 when formally traded milk peaked at 38.8 million litres. The small farmer has been most severely hit, as typified in the fall in the collection of B-grade milk from 1.16 million litres to 110,000 litres over the past five years. The fact of the persistence of the small dairy producer in pockets such as exist in eastern St. Mary, dictates the need for a restructuring of small farmer milk production toward professionally managed, production-cum-marketing business units, conferring economies of scale and improved competitiveness. Successful models of this type have been mushrooming supported by the World Bank, among peasant farmers in the former Soviet Union as part of a general policy of de-collectivization. The transformed farms, owned in joint stock by peasant farmers, are professionally managed, large-scale business units which have contributed to preserving the livelihood of small-scale resource-poor milk producers (Csaki *et al* 2000)

The surge in the international prices of milk powder over the past two years has driven a resurgence in the demand for locally produced fresh milk, as, with the closing of the price gap between fresh milk and powder, it appears that many middle-income earners have reached their indifference threshold as it relates to these two dairy substitutes. As a consequence, the price offered to primary producers has moved by 24 percent from an average

farm-gate price of $22.63 in 2005 to a modal $28.50 currently. The trade, notionally conscious of the price and income elasticity of demand for fresh milk, has applied much restraint in absorbing much of this increase; retail prices moving by only 8.4 percent over the same period.

The current disequilibrium in the market has boosted investor confidence, as exemplified by the decision of the market leader, the Seprod Group, to embark on a programme to double milk production at Serge Island in the near-term. This has contributed to the stabilization of milk production over the past two years through the rescue of more than five hundred productive females from medium scale producers who exited the sector during the past year. The vibrancy of the market for replacement dairy heifers also bespeaks a broad-based confidence in the future of the sector.

2.2.2.1 The International Dairy Trade

World fluid milk production grew by a characteristic 1.1 percent annually between 2002 and 2006 (USDA-FAS, Dec 2006). Driven by a 1.9 percent growth in domestic consumption, the imbalance has created a shortage in the supply of milk solids on the international market. Table 6 summarizes the five year production and export data to 2006 and the USDA forecast for 2007.

Table 6. World Production (Litres M) and Trade in Milk and Milk Solids 2002-2006

	2002	2003	2004	2005	2006	2007(F)
Fluid Milk Production/Consumption (Million tons)						
Production	402.3	406.4	412.3	418.2	425.1	434.0
Consumption- World	155.8	158.8	163.7	167.3	170.4	175.7
" - China	5.68	7.66	10.32	12.50	14.75	16.90
Exports – Fluid Equivalents (Litres M)						
Cheese	11.57	11.81	12.40	12.50	11.67	11.82
Butter	5.98	6.92	7.24	6.34	5.94	5.83
Skimmed milk Powder	11.51	12.90	12.82	11.13	11.57	11.60
Whole Milk Powder	11.87	11.82	13.30	12.36	12.33	12.54
Total Milk solids	**40.93**	**43.45**	**45.76**	**42.33**	**41.51**	**41.79**
Exports as % fluid milk Production	10.2	10.7	11.1	10.1	9.8	9.6

F - Forecast

Driven by an 86 percent growth in demand for skimmed milk powder in China over the period and a more normal 10 percent increase in imports of whole milk powder, prices on the international market approached

US$3000.00 per metric ton (FOB) at year-end 2006 (Figure 2). The surge has intensified even further in 2007; current European prices of both skimmed and whole milk powder reported within the range US$4300-4850 per ton (USDA-AMS, April 2007). Other factors such as grain and feed prices, weather disruptions in Oceania, the leading exporters, and significant reductions in output by the EU; as a consequence of adjustments to their Common Agricultural Policy to increase its WTO-compliance; have had significant impact on milk powder prices.

Fig. 2 Trends in International Prices of Milk Solids - 1998-2007

Consequent on the surge in the price of milk powder, the local 80g sachet price of whole milk powder has moved, over the past two years from a modal J$25.00 to $42.00 currently. This equates to a fluid equivalent reconstituted price of $52.50, a significant closure of the price gap between fresh milk and milk powder since 2005 when milk powder represented, on a fluid equivalency basis, a 130 percent saving to the Jamaican householder. The prevailing and forecasted continuing high prices of milk powder, over the next two years, also holds significant negative implications for the continued local manufacture of condensed milk, bereft of the buffer of B-grade milk, traditionally supplied by the Jamaican small farmer.

2.3 The Likely Impact of a Volatile Grain Market on the Local Cattle Sector

Pulled by a 93.4 percent increase in the price of corn over the past year, the average price of ten selected grain and feedstock prices quoted by the by the USDA Agricultural Marketing Service in their *Market News* of April 25, increased on average by 42.6 percent during the 12-month period ending March 2007. The data are summarized in Table 7 below. The selected feed

ingredients are intended to highlight the range of options available to local cattlemen, in their search for cost-effective feeding systems, to drive increased efficiency and output.

All the major commercial feed mills are purpose-built for the broiler industry and are therefore reliant on corn: Soya blends to suit the requirements of poultry. Through concerted cooperative action, cattlemen could take advantage of lower-cost ingredients such as Canola meal and rice bran, in conjunction with locally produced feed materials, for which ruminant livestock are better equipped, to convert into meat and milk. It would require a critical mass of users in strategic alliances with feed millers to make the switch worthwhile.

With specific reference to milk production, current price of Dairy ration at a modal $17,800 per ton (2006- $13,000/t) and farm gate price of milk at $28.00 (cf. $25.00/litre) have narrowed the critical milk: feed price ratio from 1.92 to 1.57 over the past year; thus making the switch to alternative feeding systems an urgent imperative. When the realized marginal response to concentrate feeding, of approximately 0.8 litres milk per kilogram (Jennings and Holmes, 1985), is factored in; the margins from conventional concentrate feeds are substantially reduced.

Table 7. Change in Grain and Feed Prices (US$ per ton FOB) – March 2006 – March 2007

Item	March 07	March 06	% Change
Soya Bean Meal	226.44	185.64	+22.0
Canola Meal	195.86	134.74	+45.4
Cottonseed Meal	201.44	166.61	+21.0
Whole cottonseed	211.90	163.84	+29.3
Corn, No.2 yellow	137.0	70.83	+93.4
Corn Gluten Meal 60% Protein	370.71	278.80	+33
Wheat Middlings	98.86	71.64	+38
Distiller's Dried Grains	131.07	90.44	+45
Rice Bran	102.97	60.41	+70.5
Dehydrated Alfalfa Meal (17% Protein)	203.54	158.75	+28.2

For beef cattle the marginal (at best) returns to grain finishing makes feedlot production particularly unattractive, as the nutritional requirements to move the steer from a lean 350 kg to a finishing weight in excess of 450 kg using conventional grain, reduces the profitability on feedlots. Where grain finishing is contemplated; even assuming a switch to some of the lower-cost ingredients shown in Table 7; a 'back-grazing' system aimed at finishing at 400kg, on well managed pasture, appears more advisable. Given the context of the surge in Brazilian exports, grass-finishing systems for beef cattle appear to be a logical option for Jamaican beef producers. Jennings and

Duffus (2005) have outlined a system for producing 15-18 month grass-finished 'Jamaican' beef, as a competitive strategy.

3.0 PROSPECTS FOR THE LOCAL CATTLE SECTOR

3.1 The Likely Near- to Long-Term Demand/Supply Scenario

During the past five years, the annual *per capita* consumption of beef and milk (fluid equivalents), peaked at approximately 9.1 kg and 66.6 litres, respectively (Ref. Tables 2&3, Dairy Facts and Figures 2005-06, JDDB). Table 8 attempts to forecast the near- to long-term demand applying these demand levels as the base assumption.

Table 8. 15-year Projected Demand for Beef and Milk

	2007	**2008**	**2009**	**2010**	**2011**	**2016**	**2020**
Population Est. (million)	2.66	2.69	2.72	2.74	2.77	2.80	2.83
Per capita Consumption:							
Beef (kg/annum)	9.1	9.0	9.2	9.2	9.3	9.5	9.8
Milk (litres/annum)	66.6	65.0	65.6	66.5	67.4	68.9	70.6
Aggregate Demand:							
Beef (kg M)	**24.2**	**24.2**	**25.0**	**25.2**	**25.8**	**26.6**	**27.7**
Milk (Litres M)	**177.2**	**174.8**	**178.4**	**182.2**	**186.7**	**192.9**	**199.8**

These projections suggest demand growth for beef of 7.5% over the next five years and further increases of 3.1 and 4.1 percent, respectively, over the next two successive five year periods. With respect to milk the corresponding projections are 5.4, 3.3 and 3.6 percent respectively.

With respect to the potentialities of the local beef and dairy sub-sectors, the recent JLA commissioned study (Duffus & Jennings, 2005) had estimated the base population of breeding females at 34,615 and 9,460 respectively, for the beef and dairy herds. Cognizant of the herd liquidations that continued into 2006, these data have been adjusted by a factor of -0.05 to arrive at the current breeding herds. Table 9 attempts to forecast the local production of beef and milk over the next 15 years in order to asses the potential of the local industry to meet projected demand and to develop strategies to optimize local production.

Table 9. Projected Growth in Output of Beef and Milk to 2020

Year	BEEF HERD		DAIRY HERD		Total Slaughter ('000 head)	Beef Production (kg M)	Milk Production (L M)
	Breeding Females	No. slaughtered	Breeding Females	No. slaughtered			
2007	33,000	23,100	9,000	6,750	29,850	6.27	15.1
2008	36,960	25,870	10,300	7,720	33,590	7.04	18.7
2009	41,390	29,000	11,860	8,920	37,920	7.80	23.3
2010	46,360	32,450	13,300	9,980	42,430	8.70	26.0
2011	51,920	36,300	14,350	10,760	47,060	9.88	28.1
2016	91,500	64,050	24,400	18,300	82,350	17.30	47.8
2020	138,800	97,200	29,950	22,450	119,650	25.12	58.8

The projections in Table 9 indicate that, without recourse to animal importation, Jamaica has the capacity to approach full self-sufficiency in beef in the medium to long term, but will be able only to meet the fluid milk component of total consumption of dairy products, within the same time horizon. A policy of a comprehensive school-milk programme based on the sole use of locally produced milk would provide the focus required for meeting the target of self-sufficiency in fluid milk. Given that a school milk programme implies the absence of a market for three months of each year, the diversification into higher value products provides a logical market buffer. This could be catalyzed by mandating that milk supplied to the School Feeding Programme contain a maximum of 2-2.25 percent fat. This would obviate growing concerns about childhood obesity while simultaneously providing the fillip for value-added production.

With respect to beef, we are unlikely, in the medium term, to competitively replace the imports of canned corned beef, liver and offal, which normally account for approximately 96 percent of imports. It is therefore evident that a strategy to exploit the export opportunities provided by Jamaica's accession to the CSME, as well as a rapidly expanding tourism trade need to be urgently adopted. **This speaks clearly to the need for enhanced food safety assurance in compliance with international requirements.** In addition, the transient nature of cost-based competitive advantage as well as the character of the international market for beef, dictates a competitive strategy with a focus on differentiation. Adoption of the "Brand Jamaica" label to Jamaican grass-finished (organic) beef bears a compelling logic.

4. Actualizing The Potential Of The Cattle Sector: Technological, Policy and Strategic Options

Stakeholders of the cattle sector, at their 2005 Conference/Workshop identified three key strategic objectives as pre-requisites to the sustained redevelopment of the Jamaican beef and dairy industries. These were:

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

The foregoing situational analysis of the cattle sector has also highlighted a number of technical, strategic and policy issues critical to the sustainable redevelopment of the sector. A number of these issues are examined and possible solutions assessed with respect to their congruence with the three key strategic objectives identified by industry stakeholders.

4.1 Realignment of the Value Chain

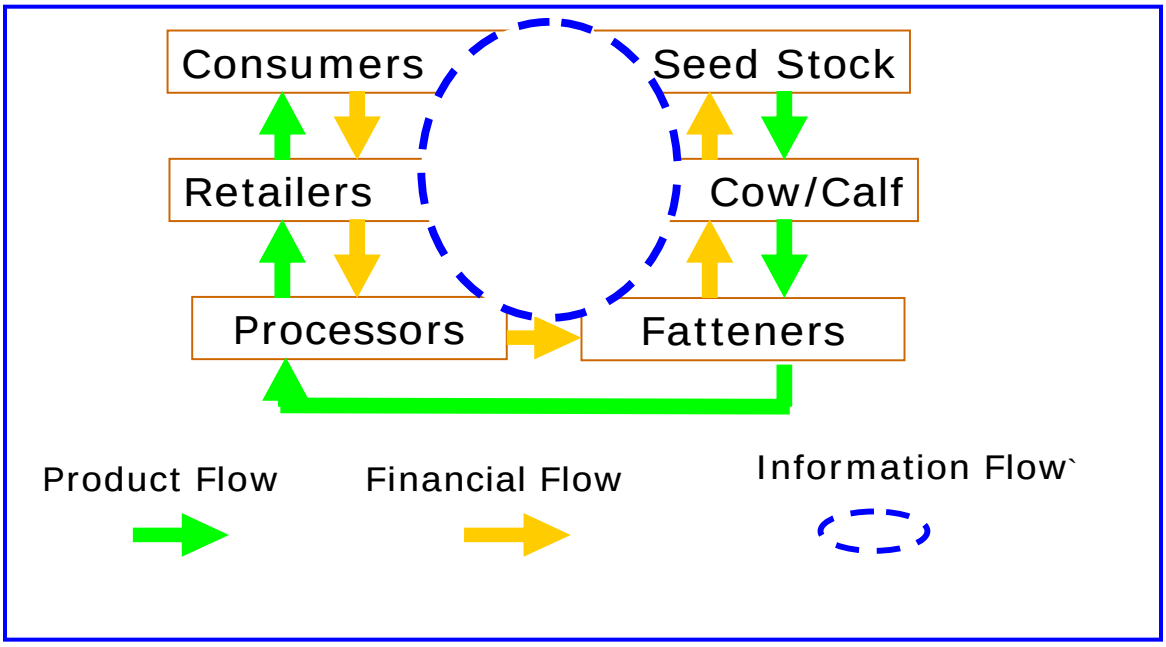
Primary milk and beef production, universally, are intrinsically low margin activities, given the low reproductive rate and prolificacy of cattle; compared to other forms of livestock production; escalating land values and the generally lower fertility of lands assigned to cattle production relative to arable crops. Out of recognition of these limits to the viability of primary production, cattlemen in the main producing countries have historically used the cooperative model, or its many variants, to ensure increased up-stream participation by the primary producer; hence the evolution of Land o' Lakes in the USA as the world's largest Agricultural Cooperative and Fonterra in New Zealand as the most significant player in the international trade in milk solids. More recently cattlemen in Alberta, Canada, typically mega-farmers, have moved to realign the value chain for beef as a competitive strategy (Kaliel, 2001). Building on this initiative the Canadian Federal Government has committed to supporting the wide scale adoption of this strategy to their Agri-food industry (Agriculture and Agri-Food Canada, 2006). Similarly, the CADIAC approach, a model for value chain realignment, developed by IICA professionals (Bourgeois and Herrera, 2000), has been used with much success in several Latin American countries including Costa Rica; now a significant exporter of beef to CARICOM, including Jamaica. The approach identifies the critical importance to the success of the process, of an activist state working in lock-step with private stakeholders. It also identifies a viable producers' organization as the driver of the process.

As a strategic objective, Value Chain Realignment is a key element of enhanced international competitiveness, not only through the greater control

over price and product decisions by producers, but also by way of the greater flow of information between participants, including the consumer.

A proposed model of the dynamics of a value chain alignment system for the Jamaican beef sub-sector is adapted from the Canadian model (Schroeder, 2003) and stylized in Figure 3.

Figure 3. Product, Financial and Information Flows in a Realigned Beef Industry



Adapted from : Schroeder, Ted C. (2003) Enhancing Canadian Beef Industry Value-Chain Alignment, National Beef Industry Development Fund

Increased competitiveness and sustained development of the Jamaican cattle sector, hinges to a large extent, on the pace at which it becomes vertically integrated. The severe attrition in the sector as a result of trade liberalization, bears ample testimony to this. The loss of livelihood by large numbers of small farmers speaks clearly to the need for greater vertical integration using the model of value chain realignment. In every regard the state remains a key stakeholder, given the critical importance of public policy to the virtual reconstruction effort required for a revitalized cattle sector. This will require a commitment to state activism as against the implied passivism of a exclusive 'market-determined' economic policy. Multilateral financial institutions such as the International Finance Corporation, have supported similar programmes in the transitional economies of Eastern Europe as well as in several African states as part of poverty eradication initiatives.

4.1.1. Strategic and Public Policy Imperatives in Value Chain Realignment

Among the relevant key issues identified in the foregoing situational analysis of the Jamaican cattle sector as requiring urgent public input are :

1. Enabling the effective adoption of an export-driven development of the beef sector. **Critical to this, is a commitment to public investment in a central certified abattoir which would satisfy the food safety requirements which are a *sine qua non* of international trade. Equally important, this investment is critical to safeguarding the public health of the Jamaican population.** As a stand-alone commercial facility, abattoirs are non-viable. Primary beef producers have recognized this and have clearly signaled their willingness to invest equity in an abattoir-cum- meat processing facility as an avenue to increased returns. A joint-venture (public/private) development approach with broad based sector participation therefore needs to be urgently pursued. The World Bank has identified abattoirs among the range of public infrastructure it is currently targeting for financial assistance (de Hahn *et al 1992 &* 2001).

2. Catalyzing local dairy development and promoting vertical integration and value-added production. The critical initiatives are identified:

   - **Resolution of the issue of the completion of the JDDF's Milk Marketing Project (MMP) within an appropriate management framework to enhance the viability of the project**. Notwithstanding current over-capacity with respect to milk processing, the MMP remains a valid strategy for value chain realignment of the dairy sector, as it opens opportunities for vertically integrating into the sector, the vast majority of small and medium-scale producers who comprise the sector. The exodus, from the formal market, of more than 65 percent of these producers since liberalization, is largely attributable to their absolute lack of participation in market related decision-making and outcomes beyond the farm gate.

   - **Creating a sustainable programme of small-farmer milk production which, while integrating them into the upstream benefits of the market, also confers the economies of scale critical to viability and sustainability of small farmer dairying**. To this end a public-sector commitment is required to facilitate community based, professionally managed, milk production-cum-marketing centres, whereby small farmers, by pooled investment of their cattle in large-scale community milk production centres, established on underutilized state lands, are guaranteed a sustained income stream. It is suggested that the significant pockets of small farmers in eastern St. Mary and South Manchester as well as the WINDALCO tenant farmers

in St. Ann and Manchester be earmarked as pilot projects. The completion of the JDFF MMP is critical to the success of this initiative.

- **Commitment to an expanded national school feeding programme based exclusively upon the use of locally produced beef and milk**. To this end the current population of approximately 550,000 children registered in the public education system, provides a potential market for upward of 20 million litres of milk (Jennings, 2002) and 12 million kilograms of beef. (Assumes 200 ml milk and a patty containing 112g beef per child per day, over a 195-day school year). With respect to School Milk, it is suggested that the specifications require medium-skimmed milk of no more than 2.25% butterfat. This would have the effect of driving product diversification while obviating concerns regarding childhood obesity. It should be noted that a recent review of a pilot School Milk Project within the inner-city Kingston basic schools (PIOJ, 2007), confirms the universal observation of increased attendance and alertness among pupils engendered by school milk programmes in many other developing countries.

4.2 Increasing the International Competitiveness of Local Beef and Milk Production

The price-competitiveness of local beef and milk may be appreciated from a comparison with available international data. Table 3 provides a crude assessment of the CIF cost per kilogram of beef imported in 2005 at approximately J$101.28 per kilogram (US$1.62 at 2005 FX rate). The annual review of Consumer Price indices by STATIN quotes the 2005 retail price of steak at $116.85. The greater acceleration in the US price of beef since 2005 suggests that, on the basis of overall carcass value, local beef retains a distinct competitive advantage over imports.

With respect to milk a January 2006 review of their international competitiveness, contained in the *New Zealand Dairy Exporter,* juxtaposed against the JDDB 2005 Cost of Production Survey (*Dairy Facts and Figures 2005-06*) *places* the cost competitiveness of locally produced milk within clear perspective (Table 10).

Table 10. International Cost Competitiveness (US$/L) of Locally Produced Milk

	Farm gate price	Cost of Production	Average wages (US$/hr)	Labour Productivity (kg milk/hr)
New Zealand	0.20	0.14	8.0	288
Argentina	0.16	0.07	3.0	86
Poland	0.25	0.07	3.0	35
Australia	0.23	0.16	13.0	289
United Kingdom	0.37	0.23	16.0	197
Jamaica (2005)*	**0.36**	**0.35**	**2.20**	**9.25****

Sources: Greig, B (2006), *New Zealand Dairy Exporter*, Jan. 2006
- *Dairy Facts and Figures 2005-06*, Jamaica Dairy Development Board

** *Based on Jennings et al (2004)*

The average wages of the work force on Jamaican dairy farms are based on a modal daily wage rates of J$1100.00 per person. The estimate of labour productivity is based upon an estimated 539 hired persons on dairy farms, an adjustment to the results of a 2004 demographic survey of dairy farms (Jennings *et al*, 2004).

The real competitiveness of producing milk in Jamaica has to be assessed within the following environmental framework:

1. The average international price of European Whole milk powder in 2005, at approximately US$2350/tonne, equates to a fluid equivalent price of US$0.29 per litre. This compares with a UK farm gate price of US$0.37/litre – effectively a 28-percent export subsidy, assuming UK prices to be typical of prevailing prices within the EU and ignoring the considerable costs and structural inefficiencies associated with the drying of whole milk;

2. The *de facto* quota placed on local milk production by the influx of imports of milk solids, heavily subsidized within the EU; our major source of imports;

3. The consequent under-production and low capacity utilization on the majority of dairy farms, faced with a shrinking market juxtaposed against the heavy losses associated with exit from an industry forced into decline.

The foregoing environmental framework, to a large extent, explains the low comparative labour productivity on Jamaican dairy farms as the forced resort

to drastic cutbacks in critical inputs and its deleterious effect on cow productivity have served to drive up the unit cost of producing milk.

The above reinforces the need for value chain realignment to confer, as with beef, greater control to the primary producer, particularly with respect to pricing and other marketing decisions. Price margins between farm gate and final consumer of the order of x3 and x4 for milk and beef respectively, within a structure which divorces the primary producer from final consumer, have left the farmer particularly vulnerable to an unfavourable external environment.

With respect to identifiable technological limits to enhanced international competitiveness, the 2005 Cattle Sector study (*op cit.*) elicited the recognition by farmers of pasture management as the major limitation to increased efficiency. Access to improved herd sires also featured significantly as a key limitation to on-farm competitiveness. On beef farms the two factors cited above, have combined to depress fertility; weaning rates having fallen below 70 percent on most farms, compared to 85-90 percent, a common range, pre–liberalization (Wellington, K.E., Pers. Com.)

With respect to pasture management, the study found that on beef farms, improved pasture occupied only 49 percent of pasture area. This compares with 89% reported for Dairy farms from a 2004 demographic survey of dairy farms (Jennings *et al*, 2004). The notional superiority with regard to pasture management on dairy farms, is belied by the findings of the annual cost of production surveys conducted by the Jamaica Dairy Development Board (Dairy Facts and Figures 2000-2005). Assessed as proportionate contribution to variable cost, pasture maintenance and fertilizer inputs accounted, on average, for only 4.8 percent of variable cost compared to 36% accounted for by bought-in feeds.

4.2.1 Policy and Strategic Options for Improving International Competitiveness

The adoption of appropriate improved technology by beef and milk producers, remains a key strategy in achieving sustained international competitiveness. In this regard public policy needs to be committed to an intensification of the historical role of the state as generator and promoter of the adoption of cost-effective technology. Jennings, (2006a) recommends a range of public interventions in this regard, in addition to a number of recommended initiatives by the private stakeholder. Consistent with the strategic framework developed by the Beef and Dairy Farmers association, the following are restated as key interventions by the state:

- **Promotion of the recognition of grass as a crop**. In this regard the role of the state as promoter would be made more effective by fiscal policies which remove the disparities between the hurdle rates to technology adoption faced by local cattle farmers vis-à-vis their

international competitors. The impact of the recently announced dedicated cattle development fund could be substantially increased through the application of a loan-grant mix to reduce the effective borrowing rate to a maximum of 5 percent. The grant would be disbursed as a matching fund against the demonstrated financial input by borrowers.

- **Promotion of a micro-lending capacity within BDPAJ** to minimize the large spreads associated with the traditional lending programmes administered by the Development Bank of Jamaica.

- **Promotion of diversification into value-added production** as a key strategy for overall industry competitiveness and sustainability. In this regard the continued growth of the local up-market brands of ice cream such as those produced by Scoops Ltd, which have effectively seen off much of the imported competition, is salutary. The rapid growth in the market for yoghurt given increased consumer awareness of healthy lifestyles also identifies this as an option for product diversification. In this regard public intervention could be channeled through two avenues:

    1. ***The use of the school feeding programme as a catalyst for product diversification, as earlier outlined; and***

    2. ***Investment in appropriate R&D through the Scientific Research Council****. Increased product diversification within the dairy Industry, would be sustainable if underpinned by the adoption of payment schemes based upon milk composition and quality. This would ensure increased revenues at farm gate thus assuring primary producers a share of the more lucrative value added market.*

- **Realignment of the historical role of the state vis-à-vis the private stakeholder in the continued development of the four cattle breeds**. The tremendous potential of the local cattle breeds as earners of foreign exchange, dictates the adoption of a commercially-driven approach to breed development, as a guarantee of consistent resource allocation, a major factor in the marked decline, particularly of the Jamaica Hope, over the past three decades (Lawrence, 2006). In this regard current initiatives being pursued by stakeholders, for a private/public sector Consortium, require a clear commitment on the part of the Public Sector.

- **Promotion of greater industry specialization**. Traditional approaches to beef and dairy farming in Jamaica have been based upon monocultural systems in which the single farmer attempts to engage in all aspects of the production cycle. A move to value chain realignment would give the fillip to the types of specialization required for greater overall industry competitiveness while ensuring that the producer

engaged in the least financially attractive segments of the chain a share of the greater returns from upstream activities. A current study by the JDDB (Miller, R.C.& Ffrench, D.L., Pers. Com.) indicates an 8-percentage units improvement in Internal Rates of Return (IRR) for specialized vs. traditional milking farms, the latter yielding maximum IRR of 14 percent, even assuming near-ideal production coefficients. The following lend themselves for consideration for public support via fiscal and technical support:

1. ***Conversion to specialized milking farms; rearing of replacement heifers contracted out to small farmers****, who have over the years developed a high degree of proficiency in foster-mother rearing of calves, or equally specialized contract replacement rearing farms. The contract rearing of replacements, has much potential for increasing the participation of women and youth in cattle farming, and could be used as a vehicle for greater ease of entry into the sector. It also represents an additional source of income for traditional small dairy farmers, who opt to invest their cows as equity in the afore-mentioned community-based milk production centres. In this regard, the EU-funded Rural Development Programme could be considered a source of seed capital for the development of pilots, within the traditional banana producing areas.*

2. ***Promotion of the development of specialized Fodder Farms or Fodder-cum-heifer rearing units on underutilized state lands****. A preliminary assessment conducted jointly by the JDDB and BDPAJ, indicates Internal Rates of Return of approximately 16% from specialized intensive fodder farms producing high quality hay and haylage for sale to the livestock sector. The bimodal pattern of rainfall typical of the Jamaican plains, where most medium and large cattle farms are located, results in critical deficits of herbage for as many as 120 days per typical year. The inconsistency of fodder supply of high nutritive value is a major factor in the poor fertility and reduced weaning weights reported for beef farms and the current sub-optimal productivity on dairy farms, the large majority of which are non-irrigated. The high fixed cost associated with the low capacity utilization of specialized fodder making equipment, on cattle farms, lends much logic to the promotion of specialized fodder farming.*

- Notwithstanding the disclaimers given for the low labour productivity highlighted in Table 10, **raising competency levels on cattle farms remains an imperative of public policy,** for contributing to enhanced international competitiveness. In this regard, a modular, extra-mural Competency Certification Programme within HEART-NTA should be considered an urgent priority. Support also needs to be given for entrepreneurial initiatives for the establishment of internet-based training/certification courses targeted at mid-level managers in the cattle sector.

- Given the spiraling cost of imported feed ingredients, **Public funded R&D into non-traditional feeding systems, needs to be urgently intensified.** The use of sugar-cane feeding technology offers an option, not only for enhanced competitiveness with respect to cattle production, but also as a viable option in the diversification of the sugar-cane sector(Jennings, 1985;1992).

- With specific reference to beef cattle, the correlated demise of the pimento industry has removed a historical source of cash flows. Large beef farms characteristically carry as high as 40 percent of unallocated lands, considered best suited to agro-forestry. In this regard **consideration should be given to using cattle farms as the vehicle for accelerating fruit tree production as well as the cultivation of fast-growing timber or fuel wood** such as Teak and Leucaena respectively. The hurdle imposed by the protracted period to reproductive maturity and income generation, of tree crops, would be minimized by introducing these crops in the form of small commercial orchards on on-going cattle enterprises, providing sufficient incentives are provided for venturing into mixed farming.

- **Promotion of mixed species grazing (cattle and sheep) on traditional beef farms as a strategy for increased viability**. In this regard the traditional beef farms offer the possibility of lower cost of capitalization than sheep as a stand-alone monocultural enterprise, as is currently being promoted by the Agricultural Support Services Project. Local research has indicated that total live weight gain per hectare on traditional beef farms may be increased, by 26-45 percent, from mixed grazing compared with steers only, at similar rates of stocking (Logan and Jennings, 1995).

4.3 Attracting Youth and Women

The 2005 study of the cattle sector identified a critical under-representation of women and youth at all factor levels; females accounting for only 7.8% of farm ownership and 11.7 percent of the labour force on Jamaican beef farms. Although age-of-farmer was not specifically included in the survey instrument, the virtual absence of beef farmers below 35 years of age was very noticeable.

While the low involvement of youth may have been the result of the unattractiveness of cattle farming consequent on trade liberalization, the under-representation of women, speaks to discriminatory policies with respect to access to capital and a failure to capitalize on the advantages of the differential socialization of women which confers a natural advantage over males in the care of animals.

Given the implications of the under-representation of youth and women for the future of the sector, the following are proposed as remedial actions for urgent consideration.

1) Activation of the Emancipation Lands Programme of 1997 as the Primary vehicle of **a programme of affirmative action to encourage The participation of women and youth in the beef and dairy sectors.** Strategies such as differential leasing and lending rates could be applied to these target groups. Consideration should be given to the divestment of these lands within a community enterprise framework using strategies such as joint-stock ownership to avoid fragmentation.

2. **Public support for capacity building within BDPAJ to establish a Micro-financing facility**. This would have the following benefits:

   a) Lower lending rates through reduced spreads vis-à-vis traditional development financing;
   b) Less formidable collateral requirements through instruments such as guarantor co-signing and equity participation by the lender.
   c) Loan-in-kind facility to minimize misappropriation of loan funds.

3**. Adoption/adaptation by sector stakeholders of the New Zealand model of 'share-milking' to the local beef and dairy sector.**
Under this system, young professionals, with experience in Dairy Farm management are encouraged to accumulate equity for their acquiring their own farms in the future, by bringing in their own cows as part of their management contracts with already established farms.
Compensation is based, *inter alia,* on the proportionate equity share of the share-milker. State intervention by way of a venture capital facility would be a critical input to the implementation of such a programme in Jamaica.

5. Is There Social And Economic Justification For Public Resource Allocation to the Cattle Sector?

The foregoing package of remedies represents a holistic matrix, primarily of public policy initiatives, considered critical to the reestablishment of a vibrant and viable cattle sector which, traditionally contributed significantly to wealth creation and social stability. The decimation of the sector is directly traceable to a passive policy framework which ceded decisions on resource allocation to a mystical 'market', intent upon the narrow concentration of the opportunities for the creation of wealth; hence the prolonged attrition which saw the exodus of a combined 80 percent of (primarily small) farmers from the sector; the resultant loss of 44 percent of the national breeding herd and the disappearance of an

estimated 13,800 jobs, between 1990 (Data Bank And Evaluation Division, Min. Agric., 1991) and 2005 (Duffus and Jennings, 2005). The scale of the impact upon the wealth stock of the small farmer might readily be appreciated from the finding that wealth depletion among small cattle producers in the three easternmost parishes (not traditionally high density cattle parishes), due to 'involuntary' reduction in cattle inventories between 1996 and 2003, was equivalent to approximately US$ 14.0 million (Logan, 2004). This author found, further, that small farmers resorted to overseas remittances as buffer in the absence of their traditional reserve of liquidity; clearly an unsustainable source of income. Public policy initiatives need to be refocused toward capitalizing on the disposition of the Multilateral Financial Bureaucracies toward reversing the negative impacts of trade liberalization, particularly as it relates to poverty reduction (e.g. Besley and Cord, 2007)

Notwithstanding the substantial reduction in the economic and social scope and scale of the cattle sector, beef and dairy farming currently accounts for approximately J$10.0 billion in invested capital (at farm level), contributes an estimated J$5.0 billion per annum to GDP and provides a livelihood directly to approximately 8000 Jamaicans (Duffus and Jennings *op cit.)*

These authors projected that a rehabilitated cattle sector has the potential, over the medium term, to increase the national output of beef and milk fourfold and threefold respectively.

It is therefore self-evident that it will require a pro-active, revamped public policy environment and an activist state providing not only an enabling fiscal and trade environment, but also a significant, predictable market, through an expanded National School Feeding Programme; in addition to the requisite technical support; to catalyze the sustained redevelopment of the sector.

Such an enabling policy environment is expected to engender the restoration of self-confidence among private stakeholders, critical to stimulating the levels of new investment required to meet the projected up-turn of the sector. Recent initiatives by new corporate entrants, involving substantial investment of capital at farm level, support this prognosis. Recent queries and expenditures on pre-feasibility studies by overseas investors, regarding the possibilities for diversification of traditional sugar-cane lands into vertically integrated beef and dairy production, suggest a coincidence of perspective by offshore entrepreneurs.

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