



# TRACKING MILK PRODUCTION EFFICIENCIES ON JAMAICAN DAIRY FARMS part II

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# BACKGROUND

- 1990-1994: 38.8M Litres Produced
- 2000-2005: 14.5M Litres (63% Decline)
- 2005-2008: 13.78M Litres (4.97% Further Decline)
- 2007: 147.8M Litres Consumed
- 9.4% From Local Production

# INTRODUCTION

- JDDDB objectives
  - increase milk production efficiencies
  - improve profitability
- 2001 – study done to determine efficiencies

# OBJECTIVES OF THE STUDY

- COMPARE MILK PRODUCTION EFFICIENCIES FOR 2000 AND 2008
- EXAMINE EFFICIENCIES OF FEED AND FERTILIZER USE



# METHODOLOGY

## Performance data analysed included:

- Stocking rate
- Milk production per cow
- Milk production per hectare
- Variable cost per litre of milk
- Return on feed cost
- Margin per cow
- Margin per hectare



# RESULTS AND DISCUSSION

**Table 1. Comparison of Stocking Rate and Milk Production among Farm Sizes (2000-2008)**

Category	Year	Average Size (ha)	Stocking Rate (cows/ha)	Litres/ cow/yr	Litres/ ha
Medium	2000	15.4	2.96	2,277	6,736
	2005	23.9	2.08	1,947	4,050
	2008	23.5	2.16	1,940	4,190
	% change	52.6	(27)	(14.8)	(37.8)
Large	2000	355.0	2.91	2,523	7,335
	2005	336.9	2.05	2,383	4,887
	2008	308.0	1.88	1,891	3,548
	% change	(13.24)	(35.4)	(24.05)	(51.63)

**Table 2. Comparison of Feed Use Efficiency among Farm Size**

Category	Year	Cost of feed/litre (\$)	Return on feed cost (\$)
Medium	2000	5.76	4.10
	2005	11.18	2.85
	2008	13.49	4.32
	% change	134.20	5.37
Large	2000	5.38	4.74
	2005	7.50	4.06
	2008	14.09	3.62
	% change	161.90	(23.63)

**Table 3. Comparison of Margin per Cow and Margin per Hectare among Farm Size**

Category	Year	Margin per cow per day (\$)	Margin per ha per day (\$)
Medium	2000	34.91	173.37
	2005	10.45	76.94
	2008	49.83	87.27
	% change	42.74	(49.66)
Large	2000	31.59	108.52
	2005	28.78	60.12
	2008	40.36	88.48
	% change	27.76	(18.47)

**Table 4. Comparison between Irrigated and non-Irrigated Farms (a summary)**

Item	Year	Irrigated	Non-Irrigated	Irrigated/ Non-Irrigated (%)
Cows/ha	2000	4.13	2.34	76.65
	2008	2.64	1.88	40.43
Litres/cow	2000	2,717	2,335	16.40
	2008	1,738	1,968	(11.69)
Litres/ha	2000	11,236	5,464	105.61
	2008	4,587	3,700	23.97
VC/litre (\$)	2000	15.42	17.98	(14.27)
	2008	38.59	38.75	(0.41)

**Table 4 contd. Comparison between Irrigated and non-Irrigated Farms (a summary)**

Item	Year	Irrigated	Non-Irrigated	Irrigated/ non-Irrigated (%)
Return on feed (\$)	2000	4.62	4.58	0.87
	2008	3.85	4.07	(5.4)
Margin per cow/day (\$)	2000	45.35	21.81	107.96
	2008	26.99	50.89	(46.96)
Margin per ha/day (\$)	2000	238.56	56.30	323.73
	2008	84.92	88.57	(4.12)

**Table 5. Comparison between Irrigated and non-Irrigated Farms according to Size**

Size	Year	Cows/ ha	Litre/cow	Litre/ha
MNI	2000	1.92	2,047	3,934
	2008	2.09	2,170	4,536
	% chng	8.85	6.0	15.3
MI	2000	4.18	2,400	10,046
	2008	2.37	1,248	2,959
	% chng	(43.3)	(48.0)	(70.5)
LNI	2000	2.36	2,347	5,542
	2008	1.62	1,726	2,792
	% chng	(31.4)	(26.5)	(49.6)
LI	2000	4.13	2,749	11,351
	2008	3.17	2,716	8,610
	% chng	(23.2)	(1.2)	(24.15)

**Table 5 contd. Comparison between Irrigated and non-Irrigated Farms according to Size**

Size	Year	VC/L (\$)	Return on feed (\$)	Margin /cow /day (\$)	Margin/ ha /day(\$)
MNI	2000	17.21	3.70	15.59	29.93
	2008	36.56	4.25	62.63	130.90
	%ch	112.4	14.9	301	337
MI	2000	15.53	4.36	56.48	236.33
	2008	38.88	4.53	11.41	27.03
	%ch	150	3.9	(80)	(88.6)
LNI	2000	19.27	4.47	31.20	73.68
	2008	41.37	3.84	36.80	59.54
	%ch	114.69	(14)	18	(19.2)
LI	2000	15.25	5.01	31.98	132.05
	2008	38.00	2.49	58.16	184.37
	%ch	149	(50.3)	81.9	39.6

## Table 6. Input Costs & Price Movements 2000-2008

Input	2000	2005	2008	% Change
Fertilizer (N) (\$/kg)	29.81	65.83	119.33	300.3
Concn. Feed \$/kg	8.39	14.80	24.96	197.5
Labour cost \$/man hr	74.75	137.50	162.91	117.9
AVC (\$)	15.91	22.32	38.59	142.6
FMG price (\$/L)	22.14	22.63	41.84	88.9

# Price Movements 2000-2008 (J\$)

- Fertilizer (46%N) - 300% (29.81 - 119.33/kg)
- Concentrate - 197.5% (8.39 - 24.96/kg)
- Labour cost - 117.9% (74.75-162.91/hr)
- Av. Variable cost - 142.6% (15.91 - 38.59/litre)
- Farm gate price milk – 88.9% (22.14 – 41.84/litre)

## Table 7. Cost of Feed and Fertilizer N per Litre of Milk

	2000	2005	2008	% Change
Conc. feed (\$/L)	5.37	7.84	16.44	206
Fertilizer (N) (\$/L)	0.29-1.15	0.63-2.53	1.14-4.59	293

Table 8. Suggested Carrying Capacities and Estimated Milk Yields at Varying Levels of Fertilizer Nitrogen

N level (Kg/ha)	Kg.DM/ ha/an (est)	Cows /ha	L/ha Unsup.	Supplm. (40%DMI)
0	10,000	2.0	4,925	7,100
56	11,800	2.3	5,850	8,450
112	13,450	2.7	6,780	9,780
170	15,140	3.0	7,400	10,100
225	16,800	3.5	8,620	12,450
336	20,200	3.9	9,850	14,200
450	23,550	4.7	11,700	16,900

Source: Jennings 1992

# Fertilizer and feed as a percentage of variable cost

- Feed cost: 35.9% of variable cost
- Pasture maintenance and fertilizer: 1.7% of variable cost
- Labour cost: 22.5% of variable cost

# CONCLUSION

- Medium size farms were superior to large in all ratios except margin per hectare.
- Irrigated farms when compared to non-irrigated had higher stocking rates and more production per ha. However, they had lower per cow production.
- Non-irrigated farms had greater financial efficiencies.
- Irrigated farms had declining efficiencies in all areas over the period 2000 – 2008.
- Non-irrigated farms had better margins/cow and per ha.
- Need for greater land use intensification.
- Need for increased use of N fertilizer
- Need for increased efficiencies throughout