

TRACKING MILK PRODUCTION EFFICIENCIES ON JAMAICAN DAIRY FARMS 2010

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BACKGROUND

- ✘ 1990-1994: 38.8M Litres Milk Produced
- ✘ 2000-2005: 14.5M Litres (63% Decline)
- ✘ 2005-2010: 12.2M Litres (15.86% Further Decline)
- ✘ 2010: 117.4M Litres Consumed
- ✘ 10.4% 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 2010
- ✘ EXAMINE EFFICIENCIES OF FEED AND FERTILIZER USE

METHODOLOGY

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 (2000-2010)

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
	2010	17.14	2.14	1,368	2,927
	% change	11.3	(27.7)	(39.9)	(56.5)
Large	2000	355.0	2.91	2,523	7,335
	2005	336.9	2.05	2,383	4,887
	2010	545.4	1.65	2,206	3,640
	% change	53.6	(43.3)	(12.56)	(50.37)

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
	2010	24.54	2.06
	% change	326.04	(49.8)
Large	2000	5.38	4.74
	2005	7.50	4.06
	2010	19.63	2.59
	% change	264.87	(45.36)

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
	2010	(31.85)	(68.22)
	% change	(191.23)	(139.35)
Large	2000	31.59	108.52
	2005	28.78	60.12
	2010	0.00	0.01
	% change	(100)	(100)

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
	2010	1.78	1.56	14.10
Litres/cow	2000	2,717	2,335	16.40
	2010	2,654	2,154	23.21
Litres/ha	2000	11,236	5,464	105.61
	2010	4,716	3,360	40.34
VC/litre (\$)	2000	15.42	17.98	(14.27)
	2010	47.47	57.13	(16.91)

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
	2010	2.67	2.38	12.18
Margin per cow/day (\$)	2000	45.35	21.81	107.96
	2010	51.77	(72.69)	240.41
Margin per ha/day (\$)	2000	238.56	56.30	323.73
	2010	91.97	(113.1)	222.97

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
	2010	1.88	1,536	2,888
	% chng	(2.08)	(24.96)	(26.59)
MI	2000	4.18	2,400	10,046
	2010	3.16	1,249	3,947
	% chng	(24.4)	(48.0)	(60.7)
LNI	2000	2.36	2,347	5,542
	2010	1.52	2,229	3,388
	% chng	(35.6)	(5.0)	(38.9)
LI	2000	4.13	2,749	11,351
	2010	1.75	2,706	4,735
	% chng	(57.6)	(1.6)	(58.3)

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
	2010	60.24	1.83	(37.58)	(70.76)
	%ch	250	(50.5)	(341)	(336)
MI	2000	15.53	4.36	56.48	236.33
	2010	53.84	3.38	(18.46)	(58.25)
	%ch	246.7	(22.5)	(132.7)	(124.6)
LNI	2000	19.27	4.47	31.20	73.68
	2010	44.27	2.45	(76.93)	(117.24)
	%ch	129.74	(45.2)	(346.6)	(259.1)
LI	2000	15.25	5.01	31.98	132.05
	2010	47.36	2.66	54.34	95.01
	%ch	210.6	(46.9)	69.9	(28)

TABLE 6. INPUT COSTS & PRICE MOVEMENTS 2000-2010

Input	2000	2005	2010	% Change
Fertilizer (N) (\$/kg)	29.81	65.83	172.48	478.59
Concn. Feed \$/kg	8.39	14.80	31.00	269.49
Labour cost \$/man hr	74.75	137.50	212.00	183.61
AVC (\$)	15.91	22.32	54.42	242.05
FMG price (\$/L)	22.14	22.63	48.56	119.33

PRICE MOVEMENTS 2000-2010 (J\$)

- ✘ Fertilizer (46%N) - 478.6% (29.81 – 172.48/kg)
- ✘ Concentrate - 269.5% (8.39 – 31.00/kg)
- ✘ Labour cost - 183.6% (74.75-212/hr)
- ✘ Av. Variable cost - 242.1% (15.91 – 54.42/litre)
- ✘ Farm gate price milk – 119.33% (22.14 – 48.56/litre)

TABLE 7. COST OF FEED AND FERTILIZER N PER LITRE OF MILK

	2000	2005	2010	% Change
Conc. feed (\$/L)	5.37	7.84	19.83	269
Fertilizer (N) (\$/L)	0.29-1.15	0.63-2.53	1.65-6.63	469-476

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: 36.6% of variable cost
- ✘ Pasture maintenance and fertilizer: 1.7% of variable cost
- ✘ Labour cost: 14.6% of variable cost

CONCLUSION

- ✘ Large size farms were superior to medium in all ratios except stocking rate.
- ✘ Irrigated farms were superior to non-irrigated in all ratios.
- ✘ Irrigated farms had greater financial efficiencies.
- ✘ Both irrigated and non-irrigated farms had declining efficiencies in all areas over the period 2000 – 2010.
- ✘ Non-irrigated farms had negative margins/cow and per ha.
- ✘ Need for greater land use intensification.
- ✘ Need for increased use of N fertilizer
- ✘ Need for increased efficiencies throughout.