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

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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 (10-100 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 (7 375 ha.) of land and carrying a total dairy herd of 18,511 head. These data suggest percentage reduction of 66 and 33 since 1990 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.

1. INTRODUCTION

Anecdotal evidence has indicated that the local dairy farming sector has undergone severe attrition over the past decade. This has to some extent been substantiated by the fact of a 52 percent reduction in formally traded milk between 1992 and 2003, production having declined from 38.8 to 18.4 million litres in the latter year.

Sector stakeholders led by the Jamaica Dairy Farmers' Federation have been lobbying for a reform of existing Government Policy on the Dairy Industry and have projected that local milk production could reach 70 million litres over the next decade given the creation of a favourable policy environment.

There has been reservation about the validity of several of the major assumptions underlying these projections given the absence of factual current information on the dairy farming sector.

The last focused survey of the sector was conducted in 1990 as part of the Ministry of Agriculture Livestock Census (Anon.1990). A more recent survey of the sector was incorporated in the 1996 Agricultural Census carried out by STATIN (Anon. 1997). Given the broad scope of this Census, it was difficult to glean detailed information of the Dairy Farm Sector.

It was therefore considered essential that a purpose-designed survey be carried out to determine the current parameters of the sector. A survey designed in collaboration with the Data Bank and Evaluation Division of the Ministry of Agriculture was carried out during the period March – June, 2004. Originally it was intended to complete the survey within a 30 day period but tardiness in the return of questionnaires resulted in the data collection period being extended to mid-June, 2004.

2. OBJECTIVES OF SURVEY

The survey was undertaken to provide an accurate, up-to-date profile of the size and scope of the dairy farming sector and the magnitude of the investment in dairy farming as an aid to meaningful planning and policy making.

The primary parameters included in the survey were:-

i) Number of farmers engaged in commercial dairy activity
ii) Acreage of land specifically allocated to dairy farming.
iii) Dairy herd size and composition
iv) Acreage of holdings in improved pastures

v) Acreage of pasture land under irrigation

vi) Number of persons employed

vii) Average monthly milk production

viii) Equipment employed in dairy farming activity.

3. SURVEY DESIGN

Farms were designated according to acreages into the following categories

SMALL: Below 10 acres (4 ha)

MEDIUM: 10 – 100 acres (4 – 40 ha)

LARGE: Above 100 acres

The survey was designed to collect data from ***all*** medium and large farms currently engaged in the commercial production of milk and to record similar data from a 5% sample of small farmers. The decision only to ***sample*** small farms was largely cost determined, but was also guided by the greater homogeneity among small farmers.

One large farmer currently engaged solely in heifer rearing and a medium sized producer who had at the time of the survey suspended milking due to the effects of prolonged drought, were also included in the survey.

Survey questionnaires were distributed with the assistance of the major processors commencing, March 15, 2004. It was intended to complete the collection of questionnaires within a 30- day period. Slow returns from a number of farms and the need to ensure full participation resulted in the survey period being extended to mid – June 2004. Twelve farmers were interviewed by telephone in a final 'mopping-up' operation.

4. RESULTS AND DISCUSSION

4.1 Distribution of Farms and Farm Size

Seventy-six producers participated in the survey. The numbers per size-class were being 7, 39 and 30 for small, medium and large farms respectively. (Table1).

Table 1: Distribution of farms by parish and size class

PARISH	SIZE CLASS			TOTAL
	SMALL	MEDIUM	LARGE	
St Thomas	*3*	4	2	9
Portland	-	-	1	1
St. Mary	*1*	-	-	1
St. Ann	*3*	5	4	12
Hanover	-	-	4	4
Westmoreland	-	2	1	3
St. Elizabeth	-	14	4	18
Manchester	-	-	1	1
Clarendon	-	13	5	18
St. Catherine	-	1	8	9
ALL ISLAND	*7*	39	30	76

Based on information provided by processors there are 185 small farmers on register. The initial intent was to record data from 10 small farmers. However upon return of the questionnaires three (3) farmers had to be re-designated as medium-sized as they operated on more than 10 acres of land.

The acreages occupied by responding farms are summarized in Appendix 1. The adjusted acreages (based on total numbers of small dairy farms) are shown in Table 2.

Table 2: Estimated Total Acreage in Dairy Farming

Size Class	Total No. Farms	% Total	Mean Farm Size (ac)	Estimate Acreage	% Total
Small	185*	72.8	7.8	1443	7.9
Medium	39	15.4	41.8	1632	9.0
Large	30	11.8	504.7	15,141	83.1
All	**254**	**100**	**71.7**	**18,216**	**-**

The available information and survey data suggest that farms primarily engaged in dairy farming, occupy approximately 18,200 acres (7375 ha.) of land, the proportionate allocation between size classes being 7.9, 9.0 and 83.1 per cent to small, medium and large farms respectively.

By way of contrast, the 1990 Livestock Census reported 753 specialized dairy farms in addition to 1500 dual purpose producers.

Table 3: Comparative Numbers of Farmers Within Size Groups – 1990 V 2004

Size Group	1990 Census	2004 Survey	% Change
Small	613	185	-69.8
Medium	109	39	-64.2
Large	31	30	-3.2
All	**753**	**254**	**-66.3**

Table 3 presents a comparison of the numbers of commercial dairy farms in operation between 1990 and 2004. The 1990 Census categorized farms into size groups based on number of head of cattle. For this comparison, we have attempted to correlate the two data sets by designating the 1990 categories into small (<10 head); medium (10-100 head); large(> 100 head).

Applying this reconfiguration suggests that the attrition in the sector has been largely from the exit of small (70%) and medium sized farmers (64%).

The 1990 Census did not disaggregate acreage occupied by dairy farms from the total acreage under livestock.. On the basis of the 170,995 acres (69,228 ha.) reported as the total in livestock farming, it was calculated that approximately (10 940 ha) 27,033 ac. were allocated to dairy farming (Jennings and Wellington, 1992) . The current estimate of 18,216 acres (7 375 ha.) suggests that one third of total acreage in dairying in 1990 have since been reallocated to alternate enterprises.

4.2 Aspects of Pasture Management

The 2004 Survey data indicate that among the farms reporting, only 73.5 percent of the farm acreage was actually cultivated in pasture, the proportions in pasture within size classes being 98.7, 89.0 and 71.7 per cent to small, medium and large farms respectively. Table 4 summarizes the relevant survey data. Appendix 2 shows the distribution of pastures between parishes and size classes; St. Ann (2584 ac), Manchester (2050 ac.) and St. Catherine (1803 ac.) accounting for 52 percent of total acreage established in pasture.

Table 4: Acreage in pasture by size class

SIZE CLASS	TOTAL AREA IN PASTURE (ac)	MEAN AREA IN PASTURE (ac)	PERCENTAGE IN PASTURE
Small	53.80	7.69	98.7
Medium	1,453.00	38.24	89.0
Large	10,863.00	362.10	71.7
ALL	12,369.80	164.93	73.5

The information from respondents indicate that overall 89 per cent of pasture acreage was established in improved grasses African Star Grass was the major cultivar among dairy farmers accounting for 74 per cent of the area established in improved grasses (Table 5). The fact that Tifton occupied only 120 acres (1%) of the total reported, highlighted the reluctance of Jamaican dairy farmers to adopt newer, highly productive cultivars that have become available over the past decade. It should be noted that African Star Grass was first introduced to Jamaica in 1973. Recent local evaluation of Tifton 85, suggests significantly higher yields than African Star (Miller, Jennings, Ffrench, 2003) and Pangola Grass (McLeod, D.S., 2003, Pers. Comm.).

Table 5: Acreage in improved pasture by type of pasture and size class

TYPE OF PASTURE	SIZE CLASS			ALL	
	SMALL	MEDIUM	LARGE		
	Acreage	Acreage	Acreage	Acreage	% of improved pasture Area
African Star	40.50	807.00	7,307.50	8,155.00	74.4
Pangola	-	109.00	150.00	259.00	2.4
Guinea	4.00	20.00	538.00	562.00	5.1
Tifton	-	-	120.00	120.00	1.1
Brachiaria	2.00	58.00	230.00	290.00	2.6
King Grass	6.30	63.00	18.50	87.80	.08
Other	1.00	260.00	1,368.00	1,629.00	14.9
All	53.8	1,256.0	9,657.00	10,966.8	100

Twelve medium and 4 large farms reported applying irrigation to pastures. A total of 1880 acres (15.2% of total pastures) were under irrigation, the four large farms accounting for 79.5 percent of irrigated acreage (Tables 6). The Mid-Clarendon Irrigation System supplied eleven of the sixteen irrigated farms, the remaining farmers utilizing on-farm wells or riparian sources.

Table 6: Acreage under Irrigation by size class

SIZE CLASS	TOTAL AREA UNDER IRRIGATION (ac)	MEAN AREA UNDER IRRIGATION (ac)	% PASTURE AREA IRRIGATED
Small	-	-	-
Medium	480.00	40.00	33.0
Large	1,400.00	350.00	12.9
All	1,880.00	117.50	15.2

4.3 Herd Profile

Total Dairy Cattle Herd: Appendix 6 shows the structure of the dairy herd owned by respondent farmers. Table 7 sets out the estimated population of breeding females by size group. The

survey data was adjusted for the actual numbers of small farmers as well as including 30 per cent of heifers in the breeding herd.

Table 7: Profile of National Breeding Herd

	Small	Medium	Large	Total
Total Dairy Herd	2749	3192	12,570	18,511
Breeding Females:				
Cows	1,400	1,905	6,758	10,063
Heifers	127	189	1,061	1,377
Total	**1,527**	**2,094**	**7,819**	**11,440**

The survey data indicate that Jamaica Hope or Jamaica Hope type animals accounted for 85 per cent of the national dairy herd.

Applying a similar assumption of the percentage of heifers included in the breeding herd of the 1990 Livestock Census data, suggests a diminution of the national breeding herd by 15.6 per cent (13,551 vs. 11,440) over the past 14 years.

In their recent proposal of a Medium Term Policy Framework for the Dairy Sector (Anon 2003), The Jamaica Dairy Farmers' Federation projected that the national output of milk could expand within a decade to 70 million litres of milk. This projection assumed an initial breeding herd of 10,000 females. The evidence from this survey verifies the robustness of this assumption.

4.4 Distribution of Dairy Farm Ownership and Employment Levels

Table 8 summarizes the gender distribution among dairy farmers within each size, group Dairy farmers were predominantly male, only five female farmers having been identified in the survey. Checks with the Serge Island Small Farmers' Register however, indicated that there were nine female farmers currently supplying milk in addition to the lone female small farmer who participated in the survey. Applying this information to the estimated population of 254 farmers suggests that up to 5 per cent of dairy farms are female – owned.

Table 8: Distribution of farmers by size class and gender

SIZE	GENDER			ALL
	N/A*	Male	Female	
Small	-	6	1	7
Medium	5	31	3	39
Large	21	8	1	30
All	26	45	5	76

* Corporate or institutional farms

With respect to hired labour, respondents reported a total employed labour force of 539 (94% full-time) including 18 females (Table 9). Adjusting the labour force data for the reported 185 small farms gives an estimate of 592 persons employed.

Table 9: Distribution of persons employed by Gender within size class

SIZE CLASS	GENDER OF EMPLOYEES	
	Male	Female
Small	2	0
Medium	97	2
Large	422	16
All	521	18

Compared to the national labour force there is much catching up required on dairy farms with respect to the employment of women, who account for only 3 percent of their labour force.

The survey data indicate that on average each dairy farm had a labour force of approximately 7 hired hands.

4.5 Feeding Systems and Milk Production

By far the predominant feeding system was grazing supplemented with concentrate feeds (Appendix 9). By-product feeding was particularly popular among medium sized farmers; 32 of the 47 farmers reporting from this group. Partial zero- grazing was also practiced by 12 farms and was characterized mainly by corralling cows at night at which time cut forages and by

products are offered. This might be viewed mainly as a security measure as the clear evidence from research is that far greater use of pasture is made from over-night grazing, suggesting that the cows' nutrition might be optimized by mitigating the high day-time temperatures by corralling under shade and maximizing grazing intake at night, under tropical conditions.

Table 10 combines pasture and animal performance data to give an index of the levels of efficiency currently being achieved nationally. The relevant data on milk production are shown in Appendix 10.

Table 10: Efficiency Profile of Jamaican Dairy Farms

Size Class	Annualized Yield / cow (ℓ)	Mean Herd Size (AU)	Mean Pasture Area (ha.)	Stocking Rate (AU/ha)	Yield / ha (ℓ / an)
Small	1060	9.6	3.1	3.1	3286
Medium	1464	58	15.3	3.8	5563
Large	2056	291	151.1	1.9	3906
All	1920	145	67.8	2.1	4032

The reported data on monthly milk yield was annualized without any seasonality adjustments to give a simple estimate of annual yield per cow which was used as the basis for deriving per hectare yields. Notwithstanding this reservation, the average output per hectare of 4032 litres per annum is considered low. The highest producing farms participating in the survey achieved stocking rates of 4.3 animal units per hectare with resulting indicative yields of 12,320 litres/ha/an. This confirms that Jamaican dairy farmers are capable of competing with and even surpassing their most efficient international counterparts.

Notwithstanding the relative absence of irrigation to buffer the effects of the regular seasonal droughts, an overall stocking rate of 2.1 animal units per hectare is sub-optimal. Improving on this deficiency is suggested as a prime move towards enhancing international competitiveness.

4.6 Level of Mechanization on Dairy Farms

The survey indicates that 80 per cent of reporting farms employed milking machines. All small farmers surveyed milked by hand which was also the method of milk extraction of 6 medium sized farms and 2 large farms. The latter were educational institutions which retained hand-milking as the method of instruction. Table 11 summarizes the data with regard to milking system.

Table 11: Distribution of farmers by size class and milking system

SIZE	MILKING SYSTEM								ALL	
	Not Stated		Bucket Type		Milking Parlour		Hand			
	N	%	N	%	N	%	N	%	N	%
Small	-	-	-	-	-	-	7	9.2	7	9.2
Medium	-	-	24	31.6	9	11.8	6	7.9	39	51.3
Large	1	1.3	3	3.9	24	31.6	2	2.6	30	39.5
All	1	1.3	27	35.5	33	43.4	15	19.7	76	100.0

Bucket-type milking equipment remains the system of choice of the medium sized farmer (63%) while 80 percent of large farms milked in parlours.

The data with respect to other equipment employed are summarized in Appendices 15 - 18. It is significant that only four farms reported owning hay or silage making equipment, indicating the relative absence of on-farm fodder conservation as a strategy to overcome the seasonality in herbage availability common to all the geographical areas in which dairy farming is practiced.

5. ESTIMATED LEVELS OF INVESTMENT

The survey data on the physical assets employed in dairy farming have been used to compute a crude estimate of the level of investment in dairy farming on a replacement cost basis. With respect to the value of equipment employed, suppliers were canvassed to determine current costs of the relevant items.

Our estimate of the current value of the physical assets employed in the dairy-farming sector is summarized in Table 12. On the basis of current costs the survey data indicate that the level of investment in physical assets in the dairy-farming sector is approximately J$1.8 billion; the individual components of greatest value being milking facilities and related equipment (35.3%) and land (46.7%).

Milk production in 2003 totaled 18.4 billion litres. At the prices prevailing in 2003 ($17.84 per litre - weighted average) milk revenues at farm gate represented an annual gross return on assets employed of approximately 18.2 per cent.

An immediate challenge to farmers must therefore be the adoption of management strategies aimed at improving this coefficient.

Table 12: Value of Physical Assets

	ASSET	UNIT COST (J$)		ESTIMATED VALUE FOR ALL FARMS (J$)
		Large Farm	Medium Farm	
1.	Milking Facilities & Equipment			
	a. Buildings/ holding yards	4.0m	2.8m	
	b. Milking Machines	7.0m	3.0m	
	c. Bulk Coolers	3.0m	1.8m	
	Sub Total	**13.0m (33)***	**7.6m (27)**	**634m**
2.	Stand by Generators (32)	800,000		25.6m
3.	Tractors & Tillage Implements (33)	2.1m		69.30m
4.	Hay/Silage Milking Equipment (4)	2.7m		10.8m
5.	Spray Races & Equipment (15)	750,000		11.25m
6.	Sprinkler System (1760 ac)	40,000/ac		70.40m
7..	Cattle	Cows – 10,000		86.00m
		Heifers – 12,000		49.30m
8.	Land Value	Improved Pasture - 70,000/ac		768.00m
		Unimproved " - 50,000/ac		70.20m
Estimated Value of Assets				**1.795 Billion**

***number of respondents**

Amelioration of the policy environment will be critical in the short to medium term to the farmer's decision to invest in the adoption of technologies to procure these improvements. In spite of the substantial reduction in numbers over the past decade the level of investment is

substantial and virtually dictates that the sector be accorded greater priority for support in Government's Agricultural Policy.

ACKNOWLEDGEMENTS

The conduct of the 2004 survey would not have been possible without the assistance of Nestlé Jamaica Limited who assisted in the distribution of questionnaires and canvassing of farmers. We therefore wish to record our appreciation to Nestlé as well as to all the farmers who participated. The invaluable assistance of Mr. Philip Ashman, Data Bank and Evaluation Division, Ministry of Agriculture, in the compiling and analysis of the data is also acknowledged.

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APPENDICES

DAIRY CATTLE SURVEY - 2004

Appendix 1

Farm size (ac) by size class

SIZE CLASS	TOTAL FARM SIZE (ac)	MEAN FARM SIZE (ac)
Small	54.50	7.79
Medium	1,631.90	41.84
Large	15,141.00	504.70
ALL	16,827.40	221.41

SIZE CLASS (FARM)

Small: 0 - 10 ac
Medium: 11 - 100 ac
Large: > 100 ac

DAIRY CATTLE SURVEY - 2004

Appendix 2

Acreage in pasture by parish and size class

PARISH	SIZE CLASS			
	Small	Medium	Large	ALL
St. Thomas	20.80	96.00	1,418.00	1,534.80
Portland	-	-	20.00	20.00
St. Mary	10.00	-	-	10.00
St Ann	23.00	121.00	2,440.00	2,584.00
Hanover	-	-	597.00	597.00
Westmoreland	-	56.00	500.00	556.00
St. Elizabeth	-	552.00	1,083.00	1,635.00
Manchester	-	-	2,050.00	2,050.00
Clarendon	-	565.00	1,015.00	1,580.00
St. Catherine	-	63.00	1,740.00	1,803.00
ALL	53.80	1,453.00	10,863.00	12,369.80

DAIRY CATTLE SURVEY - 2004

Appendix 3

Acreage in improved pasture by size class

SIZE CLASS	TOTAL ACREAGE IN IMPROVED PASTURE	MEAN ACREAGE IN IMPROVED PASTURE
Small	53.80	7.69
Medium	1,256.00	36.94
Large	9,657.00	386.28
ALL	10,966.80	166.16

DAIRY CATTLE SURVEY - 2004

Appendix 4

Mean acreage in improved pasture by type of pasture and size class

TYPE OF PASTURE	SIZE CLASS			
	Small	Medium	Large	ALL
African Star	6.75	28.82	317.72	143.07
Pangola	-	18.17	50.00	28.78
Guinea	4.00	10.00	107.60	70.25
Tifton	-	-	60.00	60.00
Bracharia	2.00	29.00	76.67	48.33
King Grass	3.15	6.30	6.17	5.85
Other	1.00	23.64	97.71	62.65

DAIRY CATTLE SURVEY - 2004

Appendix 5

Distribution of irrigated farms by parish and size class

PARISH	SIZE CLASS		
	Medium	Large	ALL
St. Thomas	1	1	2
Clarendon	11	1	12
St. Catherine	-	2	2
ALL	12	4	16

DAIRY CATTLE SURVEY - 2004

Appendix 6

Distribution of herd by type, size class and class

TYPE OF HERD	SIZE CLASS									
	Small			Medium			Large			
	Ja. Hope	Holstein	Other	Ja. Hope	Holstein	Other	Ja. Hope	Holstein	Other	TOTAL
Cows	46	-	7	1,814	61	30	5,603	844	311	8,716
Bulls	5	-	1	33	2	4	130	7	7	189
Heifers	14	-	2	619	6	4	2,945	240	353	4,183
Young Bulls	2	-	-	100	1	12	69	93	13	290
Cow Calves	20	-	1	366	3	6	1,065	139	38	1,638
Bull Calves	6	-	-	128	3	-	612	88	13	850
ALL	93	-	11	3,060	76	56	10,424	1,411	735	15,866

DAIRY CATTLE SURVEY - 2004

Appendix 7

Distribution of cows by parish and size class

PARISH	SIZE CLASS					
	Small		Medium		Large	
	N	MEAN	N	MEAN	N	MEAN
St. Thomas	27	9	85	21	1858	929
Portland	-	-	-	-	20	20
St. Mary	7	7	-	-	-	-
St Ann	19	6	115	23	1420	355
Hanover	-	-	-	-	472	118
Westmoreland	-	-	90	45	165	165
St. Elizabeth	-	-	654	47	524	131
Manchester	-	-	-	-	1067	1067
Clarendon	-	-	905	70	263	66
St. Catherine	-	-	56	56	969	121
ALL	53	8	1905	49	6758	233

DAIRY CATTLE SURVEY - 2004

Appendix 8

Distribution of Heifers by size class

SIZE CLASS	TOTAL NUMBER OF HEIFERS	MEAN NUMBER OF HEIFERS
Small	16	3
Medium	629	19
Large	3538	131
ALL	4183	62

DAIRY CATTLE SURVEY - 2004

Appendix 9

Distribution of farmers by feeding systems and size class

FEEDING SYSTEM	CLASS SIZE							
	Small		Medium		Large		ALL	
	N	%	N	%	N	%	N	%
Pasture Only	7	9.2	36	47.4	26	34.2	69	90.8
Zero-Grazing	1	1.3	7	9.2	4	5.3	12	15.8
Concentrate	4	5.3	34	44.7	28	36.8	66	86.8
By Products	3	3.9	32	42.1	12	15.8	47	61.8
Other	1	1.3	4	5.3	3	3.9	8	10.5

DAIRY CATTLE SURVEY - 2004

Appendix 10

Average daily milk production and total milk production (monthly) by size class

SIZE CLASS	AVERAGE DAILY MILK PRODUCTION (litres)	TOTAL MILK PRODUCTION (litres)
Small	26	4,680
Medium	203	232,337
Large	1,431	1,157,794
ALL	646	1,394,811

DAIRY CATTLE SURVEY - 2004

Appendix 11

Milk production (monthly) by parish and size class

PARISH	SIZE CLASS			
	Small	Medium	Large	ALL
St. Thomas	1,153	2,769	427,428	431,349
Portland	-	-	-	-
St. Mary	1,650	-	-	1,650
St Ann	1,877	13,730	103,191	118,798
Hanover	-	-	67,153	67,153
Westmoreland	-	14,500	19,000	33,500
St. Elizabeth	-	90,400	53,859	144,259
Manchester	-	-	334,083	334,083
Clarendon	-	100,596	39,883	140,479
St. Catherine	-	10,342	113,197	123,539
ALL	4,680	232,337	1,157,794	1,394,811

DAIRY CATTLE SURVEY - 2004
Appendix 12

Distribution of milk disposed of by method of disposal
and class size

METHOD OF DISPOSAL	CLASS SIZE							
	Small		Medium		Large		ALL	
	Amount (l)	%	Amount (l)	%	Amount (l)	%	Amount (l)	%
Sold To Condensery	3,287	0.2	158,898	11.4	245,123	17.6	407,308	29.2
Sold To Fresh Milk Processor	1,095	0.1	51,315	3.7	891,905	63.9	944,316	67.7

DAIRY CATTLE SURVEY - 2004

Appendix 13

Distribution of farmers by method of milk disposal
and class size

METHOD OF DISPOSAL	CLASS SIZE							
	Small		Medium		Large		ALL	
	N	%	N	%	N	%	N	%
Sold To Condensery	4	5.3	29	38.2	19	25.0	52	68.4
Sold To Fresh Milk Processor	3	3.9	11	14.5	13	17.1	27	35.5

DAIRY CATTLE SURVEY - 2004

Appendix 14

Distribution of cattle disposed of by method of disposal,
class size and type of cattle

METHOD OF DISPOSAL	CLASS SIZE															
	Small				Medium				Large				ALL			
	Cow		Heifer		Cow		Heifer		Cow		Heifer		Cow		Heifer	
	Amt	%	Amt	%	Amt	%	Amt	%	Amt	%	Amt	%	Amt	%	Amt	%
Sold to Butcher	6	86	3	100	277	100	21	54	773	89	49	82	1056	91	73	72
Sold as Breeding Stock	1	14	-	-	-	-	18	46	-	-	11	18	1	0	29	28
Other	-	-	-	-	-	-	-	-	100	11	-	-	100	9	-	-
ALL	7	100	3	100	277	100	39	100	873	100	60	100	1157	100	102	100

DAIRY CATTLE SURVEY - 2004

Appendix 15

Distribution of farmers by equipment employed and class size

EQUIPMENT EMPLOYED	CLASS SIZE							
	Small		Medium		Large		ALL	
	N	%	N	%	N	%	N	%
Bulk Cooler	-	-	31	40.8	28	36.8	59	77.6
Feed Silo	-	-	2	2.6	12	15.8	14	18.4
Standby Generator	-	-	11	14.5	22	28.9	33	43.4
Tractor for Tillage	-	-	9	11.8	24	31.6	33	43.4
Hay/Silage making equipment	-	-	1	1.3	3	3.9	4	5.3

DAIRY CATTLE SURVEY - 2004

Appendix 16

Distribution of farmers by irrigation source and class size

IRRIGATION SOURCE	CLASS SIZE							
	Small		Medium		Large		ALL	
	N	%	N	%	N	%	N	%
Own Well	-	-	5	6.6	4	5.3	9	11.8
NIC	-	-	12	15.8	3	3.9	15	19.7
River	-	-	1	1.3	-	-	1	1.3
Pond	-	-	1	1.3	-	-	1	1.3

DAIRY CATTLE SURVEY - 2004

Appendix 17

Distribution of farmers by type of spraying equipment and class size

SPRAYING EQUIPMENT	CLASS SIZE							
	Small		Medium		Large		ALL	
	N	%	N	%	N	%	N	%
Spray Race	-	-	4	5.3	11	14.5	15	19.7
Dip	-	-	-	-	1	1.3	1	1.3
Mist Blower	-	-	4	5.3	4	5.3	8	10.5
Hand	7	9.2	34	44.7	14	18.4	55	72.4

DAIRY CATTLE SURVEY - 2004

Appendix 18

Distribution of farmers by irrigation method and class size

IRRIGATION METHOD	CLASS SIZE							
	Small		Medium		Large		ALL	
	N	%	N	%	N	%	N	%
Sprinkler System	-	-	13	17.1	3	3.9	16	21.1
Flood	-	-	3	3.9	2	2.6	5	6.6
Relift Pump	-	-	5	6.6	-	-	5	6.6
Pressured Water	-	-	6	7.9	2	2.6	8	10.5
Other	-	-	-	-	-	-	-	-