

Efficiency of Milk Production in Small Holders of Cu Chi District, Ho Chi Minh City of Vietnam

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Abstract: This research based on the surveyed data from 40 dairy farmers in Cu Chi district, Ho Chi Minh city of Vietnam in the first quarter of 2017 by semi-structure, standard questionnaires and a PRA method to find out the real situation of efficiency of dairy milk production in the region and suggest some recommendations for the dairy farming development in other regions in Vietnam. The findings showed that dairy farming created stable job and permanent income for family members and hired labor in the region. Most of farms' receipt (93.7%) came from milk. Feed related costs took 43.8% and total variable cost occupied 49.1% total milk receipts. Margin over feed related costs, milk gross margin and farm gross margin were quite high, accounted for 56.2%, 50.9% and 57.7% of milk receipt, respectively. The average operating profit margin was 14.8% and return on assets of the surveyed dairy farms was 11.2%. The research suggests that even the weather conditions are not favorable, dairy farming could still have a chance to develop and it could create stable job and permanent income for the family members and hired labor. The farmers could reduce the purchase feed cost to increase their margin over feed related costs, milk gross margin and farm gross margin, operating profit margin and return on assets.

Keywords: dairy, milk production, efficiency, smallholder

INTRODUCTION

Cu Chi is a suburban district and the key district in dairy husbandry in Ho Chi Minh City¹ in Vietnam. This district has geographic coordinates from 10o53'00" to 10o10'00" North latitude and 106o22'00" to 106o40'00" East longitude, lying in the tropics with monsoon climate. The climate is divided into two distinct seasons, rainy season from May to November, dry season from December to April. The difference between day and night temperature is quite large, in the dry season is 8 – 10oC. Average humidity in the air is 79.5%, highest in July and August of 80-90%, lowest in December at 70.1% [1]. The weather conditions are so hot and humid that it is not favorable for the development of dairy farming.

However, dairy farming in Cu Chi develops quite well. It has a total herd of 66,700 dairy cows (in October 2016), accounting for 2/3 of the total head cows of Ho Chi Minh city [2] and produce more than 400 tons milk daily. It also creates stable jobs and brings high economic efficiency to nearly 8,300 farmers in 20 communes and towns of the district. In addition, It creates stable jobs and incomes for thousands of other farmers who grow grass for sale for dairy farmers in this region. Milk yield in this region was not high, but due to low purchased feed cost with the using of family labor led to low production cost, the farm margin was quite high, accounted for 57.7% milk receipts [3].

This research is done to find out the real situation of efficiency of dairy milk production in the region and provide some suggestions for the dairy farming development in other regions in Vietnam.

METHODOLOGY

The Cu Chi district was chosen as a study site because: (i) this region is located in the Southern area and have the highest numbers of dairy head in Ho Chi Minh City; (ii) farmers in this region have a long time experience in dairy milk production compared to other regions; (iii) dairy is the key economic activities in this region.

The primary data came from a survey of 40 dairy farms in the study sites in the first quarter of 2017 based on semi-structured, standard questionnaires and PRA method.

RESULTS AND DISCUSSION

Farm performance

Herd size

The average size of the herd in the study site was approximately 24 heads per farm. Many farms in this region raised both dairy cows and beefs with an average number of beef cattle were four to five. There were some farms raised around 30 heads. The average dairy cattle in the region were 19 heads, and the median was 16 heads. Of which, calves and heifers were around 8 heads, lactating and dry cows was around 11 heads.

Table 1: Herd size (Unit: head)

Detail	n	Mean (SD)	Median (Min; Max)
Total cattle	40	23.7 (12.7)	22.5 (7; 60)
Beef and male calves	40	4.4 (5.2)	3.5 (0; 30)
Dairy cattle	40	19.3 (10.93)	16 (6; 56)
Calves and heifers	40	8.43 (5.8)	7 (1; 26)

Source: Survey results, 2017

Farm receipts

On the average, farmers received 58.7 million Vietnam dong (VND)ⁱⁱ per cow per year or 645.5 million VND per farm annually. They got receipts of 12,532.7 VND per kg of milk, mainly from milk, which

occupied 93.7% total receipts. Non milk receipts accounted for only 6.3%, of which, stock sales of dairy were only 1.1% because farmers often kept their cows until they could not keep it for some reasons such as too old or unproductive cows or death.

Table 2: Cash receipts

CASH RECEIPTS	VND/kg	VND/cow	% Farm receipts	Total Earned (VND/farm/year)
Milk Receipts	11738.3	54,962,227	93.7	604.584.500
Stock sales - dairy	142.7	668,182	1.1	7.350.000
Stock sales - other	383.4	1,795,114	3.1	19.746.250
Other receipts	268.4	1,256,533	2.1	13.821.857
Non milk receipts	794.4	3,719,828	6.3	40.918.107
Total Farm Receipts	12532.7	58,682,055	100.0	645.502.607

Source: Survey results, 2017

Cost of production

Almost farmers fed their cow with purchase concentrated feed, purchase rice straw and their homegrown king grass. The total purchased feed was

nearly 5,000 VND per kg of milk, which accounted for 42.3% total milk receipts. This number is lower than those in our other previous researches [3-5].

Table 3: Cost of production

PRODUCTION COSTS	VND/Kg	VND/cow	% Milk receipts	Total Spent
Purchased feed	4960.1	23,224,629	42.3	255,470,916
Other feed costs	182.5	854,545	1.6	9,400,000
Herd Costs	158.7	742,909	1.4	8,172,000
Shed Costs	354.0	1,657,440	3.0	18,231,840
Other variable costs	106.8	500,000	0.9	5,500,000
Total Variable Costs	5762.0	26,979,523	49.1	296,774,756

Source: Survey results, 2017

Feed related costs in this region accounted for 43.8% total milk receipts. Herd cost and shed cost accounted for 1.4% and 3.0% milk receipts, respectively. Totally, the variable cost of milk production accounted for only 49.1% total milk receipts.

Efficiency of milk production**Milk productivity**

The average lactation number of surveyed cows in this region was nearly 3 with the maximum of 9 litters. This number is similar to the average number in

Ha Nam province, but lower than that in Son la province [4, 6]. The average lactation milk yield per cow was quite low at only 3,945.4 kilograms (kg). The average milk yield per day per cow in this region was rather low at only 15.22 kg. The milk yield in this region was lower than those in previous records and researches [4, 7, 8]. Milk fat was quite high at an average of 3.62%, with the median of 3.5%. Milk protein was 2.85% of the median of 2.8%. Of the 75% farmers remembered the SNF, the average number was 8.41% and median of 8.5%.

Table 4: Milk yield

Detail	Unit	n	Mean (SD)	Median (Min; Max)
Average lactation number	Litters	34	2.97 (1.38)	2.5 (1; 8.5)
Estimated average lactation milk yield per cow	Kg	37	3945.41 (780.58)	4000 (2400; 6000)
Milk Yield 2 (Calculation, Kg/cow/day)	Kg/cow/day	39	15.22 (2.54)	15 (10; 20)
Milk fat	%	39	3.62 (0.4)	3.5
Milk protein	%	23	2.85 (0.4)	2.8 (1.7; 4)
SNF	%	30	8.41 (0.39)	8.5 (7.1; 9)

Source: Survey results, 2017

Due to a quite lower proportion of production cost, margin over feed related costs in this region was 5142.6 VND/kg milk, accounted for 56.2% milk receipt. The average milk gross margin calculated per kg milk was 5,976 VND, accounted for 50.9%, and

farm gross margin calculated per kg milk was 6,770.7 VND, occupied 57.7%. These numbers were much higher than those in some other regions of our previous researches [5, 6].

Table 5: Productivity

Detail	VND/kg	VND/cow	Total per farm (VND)
Feed Related costs	5142.6	24,079,174	264,870,916
Margin over feed related costs	6595.7	30,883,053	339,713,584
<i>Gross Margin - milk only</i>	5976.3	27,982,704	307,809,744
<i>Gross Margin - whole farm</i>	6770.7	31,702,532	348,727,851

Source: Survey results, 2017

Profitability

The dairy operating profit per cow per year was 8.4 million VND. Calculating per kg of milk, dairy operating profit was 1,801.4 VND. The average operating profit margin was 14.8%. Return on assets of the surveyed dairy farms was 11.2%. This number is

much lower than those in other agricultural sectors in the North of Vietnam in previous researches [9]. The explanation for that may be, the farmers underestimated their assets because they did not record their transaction in farms.

Table 6: Profitability ratios

Description	Unit	Number
Return on assets - operational	%	11.2
Dairy operating profit	VND/cow/year	8,434,691
Dairy operating profit	VND/farm/year	92,781,601
Dairy operating profit	VND/kg milk	1,801.4
Operating profit margin	%	14.8

Source: Survey results, 2017

Efficiency of labor**Job creation**

Not only created stable income for dairy farmers, dairy farming also created jobs for farmers both hired and family labors. On the average, each farm created stable job for 2 family members. There were 28

out of 40 (70%) farms hiring more labor in the labor market, also with a few numbers (1 to 4 people), mainly for seasonal or crop jobs, eg. grass cutting. All hired labors were male. This number is lower than those in our previous studies in some Northern regions of Vietnam [3, 5, 10].

Table 7: Job creation

Detail	n	Mean (SD)	Median (Min; Max)
Hired labor	28	0.29 (0.85)	0 (0; 3)
Wage for hire labor	2	4250 (1767.77)	4250 (3000; 5500)
Hired female labor	23	0 (0)	0 (0; 0)
Family labors	38	2.18 (0.8)	2 (1; 4)
Female family labors	34	0.85 (0.5)	1 (0; 2)

Source: Survey results, 2017

Permanent wages

On the average, each dairy farm created 15.3 million VND paid permanent wage per annum. Each

dairy cow created around 1.4 million VND per year. In other word, each kg of milk could create 297.1 VND paid permanent wage.

Table 8: Permanent wage creation

Detail	Total (VND)
Permanent wages yearly per farm	15,300,000
Permanent wages per kg of milk	297.1
Permanent wages per cow	1,390,909.1

Source: Survey results, 2017

Labor productivity

Family labor in dairy farms worked quite hard every day. In order to milk their cows at around 5 am, farmers had to start working at around 4.30 am. In some special cases, for example, in case the cows get diseases or having birth, they had to wake and monitor their

cows whole night. Therefore, even each dairy farm created job for only more than 2 family labors, the imputed labors were 4. In fact, each imputed labor created 12,929 kg milk yearly only. But physically, because they worked long hours, each labor could produce 21,267 kg milk yearly.

Table 9: Labor productivity

Labour inputs	Unit	Number
Imputed labor (40 hours/week)	Number of equivalent labor	4.06
Labor productivity	Kg / Labour unit	21,267
Labor productivity	Kg / Imputed labour unit	12,929

Source: Survey results, 2017

CONCLUSION AND SUGGESTIONS

The herd average size in the study site was around 24 heads per farm. Many farms raised both dairy cows and beef cattle with an average number of beef cattle were approximately five, and dairy cattle were 19 heads. The average lactation milk yield and average milk yield per day per cow was quite low at only 3,945.4 kg and 15.22 kg, respectively.

Most of farms' receipt (93.7%) came from milk. Almost farmers fed their cow with purchase concentrated feed and rice straw, and their homegrown king grass. The total purchased feed was nearly 5,000 VND per kg of milk, accounted for 42.3% total milk receipts. Feed related costs took 43.8% and total variable cost occupied 49.1% total milk receipts. Due to a quite lower proportion of production cost, margin over feed related costs, milk gross margin and farm gross margin were quite high, accounted for 56.2%, 50.9% and 57.7% of milk receipt, respectively. The average operating profit margin (14.8%) and return on assets of the surveyed dairy farms (11.2%) were much lower than those in other agricultural sectors in the North of Vietnam in previous researches.

On the average, each farm creates stable job for 2 family members. There were 70% households hiring more labor in the labor market. Each dairy farm created 15.3 million VND paid permanent wage per annum. Each dairy cow created around 1.4 million VND per year and each kg of milk could create 297.1 VND paid permanent wage. Due to family labor in

dairy farms worked quite hard every day, the imputed labors were 4. Each imputed labor created 12,929 kg milk yearly only, but as they worked quite long hours, each labor could produce 21,267 kg milk yearly.

From the above analysis, some suggestions are provided as relevant to other farmers in Vietnam:

- Even though the weather conditions were not favorable for dairy farming, farmers could still have a chance to raise dairy cows and improve their income, which in turn, enhance their living standard through dairy farming
- Dairy farming could create stable job and permanent income for the family members and hired labor, which could reduce the social instability such as immigration from rural area to urban areas, reduce the stress for urban areas, decrease the social evil, etc.
- If the farmers could reduce the purchase feed cost, the total variable cost will decrease and their margin over feed related costs, milk gross margin and farm gross margin will go up. This could create an opportunity to increase the average operating profit margin and return on assets.

ACKNOWLEDGEMENTS

The author would like to thank the Australian Centre for International Agriculture Research (ACIAR) for their support in doing small project AH/2016/020.

The author also would like to thank Mr. Nguyen Ngoc Bang, a PhD candidate, and Dr. John Al-

Alawned, lecturer in Veterinary Epidemiology, University of Queensland, Australia for their support in processing the data in table 1, 4 and 7.

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ⁱⁱ Vietnam Dong (VND) is Vietnam currency. 1 USD= 22,700 VND by 23/7/2017, source: formal exchange rate of Vietnam at <https://www.vietcombank.com.vn/exchangerates/>

ⁱ The largest city of Vietnam