



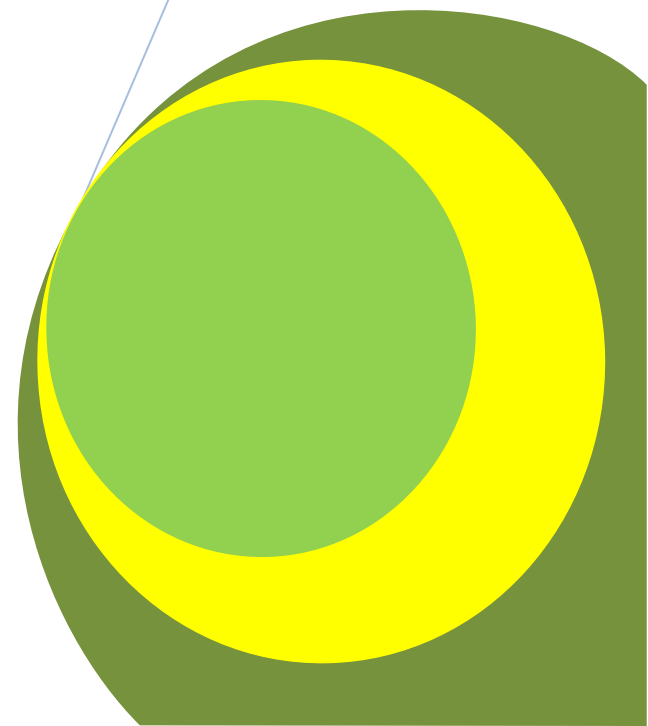
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## **Production and marketing constraints of dairy farmers in Son La milk value chain, Vietnam**

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*Research Article*

# Production and marketing constraints of dairy farmers in Son La milk value chain, Vietnam

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## ABSTRACT

Rural livelihood augmentation has long been a crucial challenge for the effectiveness of Vietnamese government policies in agricultural sector. Despite the amazing fact that farmers' participation in the dairy value chain has promised the better outcome, there are still millions of rural farmer households struggling against the inefficient production and marketing, and decline with hope of improving their main source of income. Plus the extreme price volatility and the market power of downstream actors, rural dairy farmers with small-scale production have verged to the edge of selling up the whole supply chain. This paper attempted to analyze the production and marketing constraints faced by the local dairy farmers in the milk value chain of Northern mountainous Sonla provinces of Vietnam. The Pearson's chi-square test was employed to assess the statistical significance of farmer's responses across the study sites. The results of the study revealed farmers produce and market different qualities of milk to two main buyers under the constraints of high input prices, feed scarcity, exploitation by downstream actors, capital investment inadequacy, inadequate poor market information and knowledge, lack of technical support from dairy manufacturer and local authority, land limit, and cow diseases.

**Keywords:** dairy farmer, production, marketing, value chain, Sonla.

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## INTRODUCTION

Agriculture in developing countries has been struggled with the problem of low returns (Ellis, 1996) which has reasoned from the lack of concern about agro-product marketing (Ellis, 1996; Pennings and Leuthold, 2000; Key et al., 2000). At this point, the production and marketing have to be focused on several phases, from a commodity phase (agricultural products, manufactured goods, services) to institutional (producers, marketing intermediaries), to functional (buying, selling, promoting, distributing, pricing) to managerial (analysis, planning, organizing, controlling) and to social (market efficiency, product quality, social impact) (Kotler, 1972; 1988). In the process of transfer from farmers to consumers, agro-products pass through a channel involving a sequence of changes in their forms and prices, and several intermediaries play important roles in getting products transferred from farm-gates to the consumers (Ellis, 1996). Farmer usually considers possible profit from the new agro-products (Blaikie, 1988; Thapa, 2001) that largely depends on marketing operations (Isik, 2002). In the absence of an efficient system, farmers are deprived from satisfactory income, eventually discouraging them from venturing into the production of commercial product (Ervin and Ervin, 1982; Blaikie, 1985). Besides, the poor production and marketing information and knowledge, small-scale farming, lack of storage facilities, inadequate capital investment, weak bargaining power, and low social status on the one side lead the farmers easily to be exploited by the traders and middlemen, and on the other side lead to a monopsony or oligopsony types of system (Thapa et al., 1995; Shrestha and Shrestha, 2000; Lantican, 1997; Banskota and Sharma, 1999; Khushk, 2001). Combined with seasonality, trend, shocks, and transforming structures and processes of the farmer's vulnerability context, these have further driven them away from efficiently producing and marketing their products (Chambers and Conway, 1992).

Son La province was selected in this study as it is the main dairy cow production area in the North of Vietnam. This province accounts for nearly one third in term of the numbers of dairy cow and approximately a half in term of milk production in the Northern region. It also ranks the third in the top 10 provinces that have the largest numbers of head cow in Vietnam<sup>1</sup>. However, it is obvious to see that dairy farmers in this province have not yet independently played their role effectively (Jonathan, 2010). Not only are they struggling to achieve such expected

outcome from production, but also are finding it difficult to market their milk without helps from milk collectors and dairy plant. Also, the local milk markets are not perfectly competitive when market powers are in hands of downstream actors. Farm-gate prices considerably vary among different farmers (Nancy, 2006). Milk quality control and assessment were rarely undertaken by the concerned local authorities or the manufactories leading to untraceable product and ambiguous recognition of brand (Jonathan, 2010). While the retailed price is relatively high compared to neighboring markets (Luan, 2008; IFCN, 2006), there are questions needed to be asked on how equitable the benefits of the people involved are. This research therefore will shed light on factors that constraint milk producer to efficiency enhance their production and marketing as the case of rural dairy farmers those who shoulder the most important tasks and risks but the less gain in the milk value chain.

## METHODOLOGY

Conducting the production and marketing analysis is important for assessing how to add value through high quality and safety products and then strengthen farmer's bargaining power in the chain. Mapping the constraints helps to improve the potential of production operation and to enhance the ability of farmer to better access the market. It further enables policy-makers to identify the most appropriate intervention based on where the value chain can be upgraded and to provide support services to farmers with technological development, technical assistance, skills training, marketing or access to financial services (Grunert, 2005).

The study was conducted in Sonla provinces which is located in the Northern mountainous areas of Vietnam. It has two large plateaus also named Son La and Moc Chau, and an immense area of crop fields. The rest consists of valleys, high hills and mountains; Son La province borders Laos to the South. The province is co-inhabited by various ethnic groups: the Xa, H'Mong, Dao, Muong, Kinh, Kh'Mu, Tay, Thai and so on. The Thai is the largest single ethnic group. Eighty percent of the province's natural area is covered with mountains. On the Moc Chau plateau there are dairy farms and factories producing dairy products for domestic consumption and export. The dairy production in this province accounts for the number of total 6,396 head cows and 22,111.5 tons of milk<sup>1</sup>.

Formal and informal survey, field observation and visit, and key informant interview with producers and traders were held using checklists on production and marketing of milk. The province was categorized into three type of farmer household: the large raise more than 10 dairy cows (comprising proportional households of 35), the average raise from 5 to 10 dairy cows (35 households), and the small raise less than 5 dairy cows (60 households). Then, a total of 130 dairy farmer households were randomly selected for household survey. A structured questionnaire was framed, pre-tested, and finalized. Interviews contained a limited number of set, closed questions, designed to elicit basic quantitative data, and a range of open-ended questions guided by a checklist of discussion topics. Randomly selected 3 collector (total of 8), 1 dairy manufactory, 1 input supplier, 3 distributor, and 4 middlemen in different markets and marketing days were interviewed. To determine the functions of actor in the chain and the flow of the commodity from the producers to the consumers, the tracing approach wherein the farmers and traders were asked about their outlets and so on until the consumers were reached. Interviews were designed to uncover key aspects of dairy farmer production and marketing strategies particularly the constraints of integrating into the dairy value chain. The observational approach taken will be supplementary to the interviews, and must best be described as "unobtrusive observation" (Robson, 2002). Key informants were selected via a process of "theoretical sampling" (Glaser and Strauss, 1967) based on their potential to offer distinct and important perspectives on the research theme.

The household survey data was analyzed using descriptive statistics of SPSS (2011). A Pearson's chi-square test ( $X^2$ ) was used to assess the statistical significance of household responses across the study sites. Datas were fitted to a simple linear model, considering study sites as independent variables.

## RESULTS

The purposes of participating in the dairy value chain for farmers are: the economic gain (eco), the perceived advantages of being supported by the dairy manufactory or the local authorities (sup), the imitation of the other farmers (fol), and the employment and household expenditure (em) (Fig 1). The dairy farmers considered the economic purpose the most (18.5%, 31.5%, 19.2% for the large, small, and average respectively) and the expectation of being supported by the manufacturer or authority the less (only 2.3% for the small). The other farmer's dairy chain involvement partly compromised the participation of the new farmers in the chain especially the case of large dairy farm (8.5%). As well mentioned that Sonla is the mountainous area where the ethical minority habitation is

popular, the survey revealed 16.9% ethical dairy farmers in the study site. Plus the average secondary-school education of surveyed farmers, this considerably concludes the “following” decision to involve in the dairy chain.

Most of dairy farmers in the study site have started their production in early 2001 and the latest was in 2009. On the average, a dairy cow can daily provide 20 kg of milk and through 285 to 300 days a year. The dairy cow varieties are purebred HF, or F1, F2, F3 of HF which was imported and domesticated in Sonla. Dairy production and marketing activities approximately employ average 2 family labors for 9 hours a day. This number is 3 labors and 11 hours a day in the case of large dairy farm. Beside the grass, compounded mash, corn, soybean, farmers also have to add other kinds of feed to the nutrition of dairy cow meal as such: ferment, vegetables, sugarcane, becomex, calcium, conex, rice (15,4% and 6,9% for the small and the average respectively) (Table1).

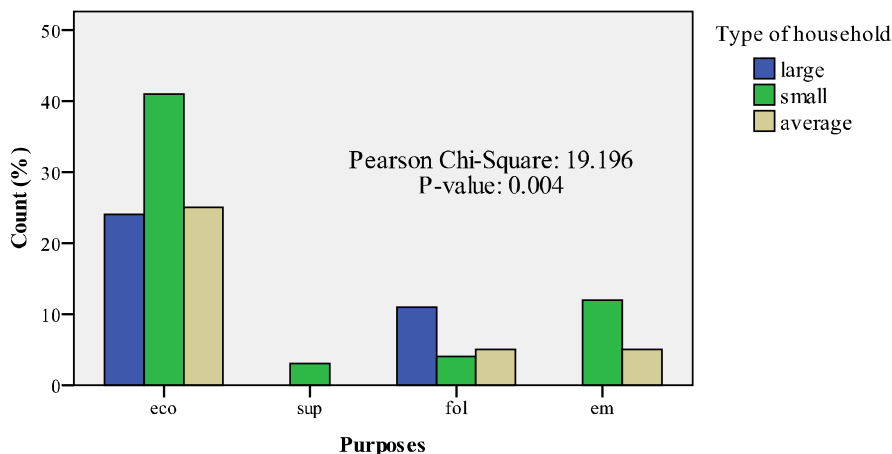


Fig 1: Purposes of raising dairy cow

Table 1: Practices in production

Categories	Large (n=35) (Percent)	Average (n=35) (Percent)	Small (n=60) (Percent)	Total (N=130) (Percent)	Test	
					$\chi^2$	P-value
Adding other feeds	0 (0.0)	9 (6.9)	20 (15.4)	29 (22.3)	14.492	0.001
Adding grass and straw	0 (0.0)	16 (12.3)	26 (20.0)	42 (32.3)	22.916	0.000
Provide vitamins	35 (26.9)	35 (26.9)	54 (41.5)	124 (95.4)	7.339	0.025
Injection	20 (15.4)	15 (11.5)	49 (37.7)	84 (64.6)	15.732	0.000
Milking equipment	35 (26.9)	12 (9.2)	1 (0.8)	48 (36.9)	91.919	0.000
Milking storage	35 (26.9)	13 (10.0)	13 (10.0)	61 (46.9)	56.302	0.000

Source: Survey 2010 - 2011

Table 2: Sale characteristics

Categories	Large (n=35) (Percent)	Average (n=35) (Percent)	Small (n=60) (Percent)	Total (N=130) (Percent)	Test	
					$\chi^2$	P-value
<b>Milk quality</b>						
Type A	35 (26.9)	32 (24.6)	53 (40.8)	120 (92.3)	4.298	0.117
Type B	0 (0.0)	7 (5.4)	12 (9.2)	19 (14.6)	8.198	0.017
Type C	0 (0.0)	2 (1.5)	3 (2.3)	5 (3.8)	1.946	0.378
<b>Buyer</b>						
Local collector	35 (26.9)	29 (22.3)	53 (40.8)	117 (90.0)	6.058	0.048
Dairy company	0 (0.0)	6 (4.6)	7 (5.4)	13 (10.0)	6.058	0.048

**Table 2 Continues**

<b>Contract for sale</b>	35 (26.9)	30 (23.1)	42 (32.3)	107 (82.3)	14.044	0.001
<b>Type of contract</b>						
Verbal	0 (0.0)	7 (5.4)	15 (11.5)	22 (16.9)	42.419	0.000
Written	35 (26.9)	22 (16.9)	20 (15.4)	77 (59.2)	42.419	0.000
Both	0 (0.0)	1 (0.8)	7 (5.4)	8 (6.2)	42.419	0.000
<b>Mode of transport</b>						
By foot	0 (0.0)	0 (0.0)	11 (8.5)	11 (8.5)	20.424	0.000
Bicycle	4 (3.1)	7 (5.4)	17 (13.1)	28 (21.5)	20.424	0.000
Motorbike	31 (23.8)	28 (21.5)	32 (24.6)	91 (70.0)	20.424	0.000

Source: Survey 2010 - 2011

**Table 3: Difficulties in production and marketing milk**

Categories	Large (n=35) (Percent)	Average (n=35) (Percent)	Small (n=60) (Percent)	Total (N=130) (Percent)	Test	
					$\chi^2$	P-value
High input price	25 (19.2)	23 (17.7)	32 (24.6)	80 (61.5)	15.173	0.004
Input scarcity	22 (16.9)	18 (13.8)	38 (29.2)	78 (60.0)	1.468	0.480
Low selling price	15 (11.5)	25 (19.2)	42 (32.3)	82 (63.1)	20.345	0.000
Contracting	35 (26.9)	31 (23.8)	54 (41.5)	120 (92.3)	4.055	0.132
Capital investment	9 (7.0)	11 (8.5)	11 (8.5)	31 (24.0)	2.411	0.300
Market Infos and Knowledge	35 (26.9)	29 (22.5)	46 (35.7)	110 (85.3)	8.715	0.013
Technical support	35 (26.9)	17 (13.1)	24 (18.5)	76 (58.5)	34.699	0.000
Local extension system	35 (26.9)	21 (16.2)	41 (31.5)	97 (74.6)	17.105	0.000
Land limits	35 (26.9)	28 (21.5)	44 (33.8)	107 (82.3)	10.970	0.004
Cow diseases	0 (0.0)	18 (13.8)	48 (37.0)	66 (50.8)	58.454	0.000

Source: Survey 2010 - 2011

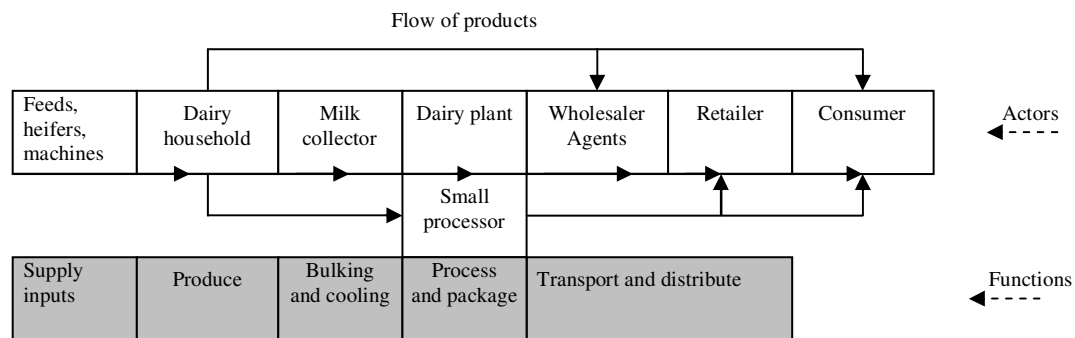
Every dairy farm has small land for growing grass. The small-sized farm affords less than 0.04 ha the grass production while the average has 0.04 to 0.1 ha and 0.11 to 0.22 ha of the large-sized farm. However, they still have to buy more grass and straw to feed the dairy cow (16% and 26% for the average and the small respectively) (Table 1). Additional vitamins and minerals are also needed, which required 26.9% the large and average, 41.5% the small dairy farm to supplement to the cow feeding ration. Injection, milking equipment, and storage are the last criterion to ensure the quality of milk before it gets to the collection point with profitable farm-gate price. Not many farmers could afford such practices as it is well said only 9.2% and 0.8% of the respective average and small do have milking machine, and 10% of them do have milk storage equipment (Table 1)

Dairy farmer market different types of milk quality (type A, B, C). The classification of milk quality is usually done by the collector and the dairy plant (Table 2). The type A milk quality with the buying price offered at 0.65 US dollar/kg is dominant in the production and marketing of dairy farmers (26.9%, 24.6%, and 40.8% for the large, average respectively). Only small proportion of type B and C milk was marketed with the price of 0.62 and 0.6 US dollar/kg<sup>i</sup> respectively. The total of 82.3% of dairy farmers sells their milk through 2 types of contract (verbal and written) to local collector and dairy manufactory. Collectors are the main buyer for most of the dairy farm. The transport of milk to the collecting point is done by foot (8.5% of small dairy farm), by bicycle (21.5%), and by motorbike (70%). Farmer said the local collecting point is adjacent to their production, and then it does not take much time to convey their harvest to the transaction.

It is being reported that dairy farmer appeared to face several problems in marketing their products such as: high input price (61.5%), scarcity of input (60%), low farm-gate price (63.1%), unconvincing contract

fulfillment(92.3%), limited fund and credit access (24%), poor market information and knowledge (85.3%), lack of technical support (58.5%), quality standardization and specification, limits of land areas (82.3%), neglected local extension system (74.6%), cow diseases (50.8%)...etc (Table 3). Among these marketing constraints, small dairy farm has raised more concerns about market information and knowledge (35.7%), problems of sale contract with buyer (41.5%), and cow-udders diseases (37%) while the most marketing constraint of the average farm is the contract noncompliance of the buyers. The lack of technical support, market information and knowledge, limits of land, and intervention of local authorities come as need for the marketing efficiency of the large dairy farm.

Focusing on the value chain of milk in Son Ia, there is only one major supplier of heifers, grasses, feed, proteins, etc for dairy farmers in the region, which belongs to Moc Chau Company. Besides, there are some private input and equipment suppliers for dairy farmers for example the DeLaval Company. The dairy farmers are the key actors in the chain of milk as they play a very important role of creating quality and safety products and other actors just depend on their production operation. Thirteen milk collecting centers and milk collectors (some are dairy farmers) in the region are under control and management of the dairy plant. The dairy plants are the most powerful actor in the milk value chain and belong to Moc Chau Company. They are the decision-making actor for the whole chain. They link dairy farmers with input suppliers, milk collectors and distributors as well. Their influences are also on both wholesalers and retailers. In the distribution stage, there are many participants namely the small milk shops, milk cake shops, showrooms, supermarkets and many agents and retailers. Since the beginning, the chain is supported by many organizations and projects from BTC, JICA, MARD, DARD, ASODIA and NIAH that are mostly targeted on financial and technical term of the dairy production for the local farmers (Fig 2). Local authorities have only promoted the chain by land provision for participated farmers but none of polices intended to control price and milk quality.



**Fig 2.** The value chain of milk

## CONCLUSION

Dairy production is becoming one of the most important solutions to achieve sustainable development for agriculture in Vietnam (Bogdan Krol, 2008). Since the large numbers of seasonal rural worker are involved in low profitable agriculture, there is highly a possibility of fighting unemployment through dairy farming. In addition, milk production is almost daily as it well generates high and stable income with many other benefits. The surplus fodder and agricultural by-products are always available for feeding the dairy cow. The cow's manure provides good organic sources for improving soil fertility and crops yield as well as fuel for household consumption. However, milk production and marketing in Vietnam have been facing many difficulties. The production is compromised by decreasing farm-gate price, severe competition from imported milk, and sharply increasing price of input factors (Viet, 2008). Situation of unsecured food safety and loosen quality control in recent years (for instance: Melamine) led to the reduction of social beliefs which in turn caused the extreme decrease in domestic milk consumption.

Markets are often secretive and disorganized (Brigitte, 2010), and small dairy producers lack the capacity to actively interact and negotiate with more experienced downstream market actors. Rural value chain stakeholders generally only receive a meager share of the value of the final agro-product, which showed marketing intermediaries buying at low prices by taking advantage of dairy farmer's weak market power (Mohtar, 1997; Gunawan, 1997; Shrestha and Shrestha, 2000; Khushk, 2001). The weak market power may reason from small-scale production, non-homogenous product quality, poor market information and knowledge, high transaction cost per unit of marketed product, cash shortage, and perishability of product etc. Particularly in the case of highly perishable products such as

vegetables, fruits, and milk, there is a high risk of these products decaying while being transported and stored at different markets (Ellis et al., 1997; Sidhu, 1997; Fuentes, 1998; Lyon, 2000; Gandhi et al., 2001).

If the marketing intermediaries are really getting a large share of the benefit generated by dairy products by taking advantage of farmers' weak bargaining power, arranging production and marketing through farmers' groups can help considerably to overcome this problem. By organizing themselves in groups, particularly small farmers' can enhance their dairy production operation, take advantage of economic of scale, manage the homogenous milk qualities, control the cow diseases, establish a market information system, thereby reducing the chance of market price information being manipulated by intermediaries and increasing the proportion of their share of income. Farmers can get more benefits when milk are transported and marketed in bulk (Bingen et al., 2003). Moreover, for small farmers to thrive in the global economy, it is necessary to create an entrepreneurial culture in rural communities (Lundy et al., 2002). This means shifting the focus from production-related programs to more market-oriented interventions. This has placed the attention on institutions of collective actions among farmer groups and local authorities as an efficient mechanism for enhancing production and marketing performance (Kariuki and Place, 2005). These will lead to increased incomes and food security, more rural employment, and sustained agricultural growth (Dorward et al., 2004; Stiglitz, 2002; Poulton et al., 1998).

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