

## BUFFALO MILK MARKETING BY THE GUJJARS (TRIBALS) IN THE JAMMU AND KASHMIR STATE IN INDIA

**Tarunvir Singh<sup>1</sup> and Sudhakar Dwivedi<sup>2</sup>**

### ABSTRACT

The present investigation is an attempt to study the marketing of buffalo milk produced by a well-known pastoral community-the Gujjars of the Jammu and Kashmir state. The study was undertaken in the Jammu region. About 200 households were studied in different districts of the Jammu region. Marketed surplus of milk and factors affecting it, marketing cost, margin and price spread were studied. The Cobb-Douglas production function was used to study the relationships between marketed surplus of milk and factors affecting it, and it was found that milk production and the price of milk had a positive and significant impact on the marketed surplus of milk. The producer's share in the consumer's price was maximum in the first channel (Producer- Consumer).

**Keywords:** marketed surplus, marketing margin, marketing cost, price spread

### INTRODUCTION

The excess of output over sectoral retention refers to what is termed as marketable surplus. This is distinct from marketed surplus. which represents only that portion of the marketable surplus which

is actually marketed. Marketed surplus may be less, equal or more than the marketable surplus depending upon the external factors operating on the market economy.

It is often argued that marketed surplus of a commodity is a function of the level of production and consumption of the commodity. Eventually large producers would market more both in absolute terms as well as in relative terms. But in the case of milk, being a perishable commodity, sometimes there is distress sale, particularly among small and marginal farmers, who will have a cash crunch unless adequate market infrastructure is provided, and it is often seen that the majority of large producers sell proportionately less milk than what they had produced. Thus, farms, unless they happen to be specializing in dairy farming, do not enter the market in a big way. Because of higher home consumption of milk by large producers, what is just non-marketing level for them is sufficiently a specialized market level for small or marginal farmers or landless labourers (Singh, 1978). The retention capacity of the producer depends upon his financial position, the credit facilities available to him and the price level in the market. The proper incentives and adequate market infrastructure for the excess production of milk will not only help in increasing milk production, but also increase the marketed surplus. The marketed surplus is mainly governed by production, domestic consumption,

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<sup>1</sup>Institute of Economic Growth, New Delhi, India, E-mail: vir.tarun@gmail.com

<sup>2</sup>Division of Agricultural Economics and Statistics, Sher-e-Kashmir University of Agricultural Sciences and Technology- Jammu, 180009, India

price and market infrastructure.

In order to provide the minimum nutritional requirements of milk to the majority of population, the marketed surplus has to be increased substantially. The disposal of milk in a milk producing household consist of liquid milk consumption and conversion of milk into various milk products at the producer household, and the balance is available for sale of milk, which constitutes as marketed surplus.

The present investigation was an attempt to study the marketing aspects of dairying of one of the well-known pastoral communities-the Gujjars of the Jammu and Kashmir state in India. Though information on sociological and anthropological aspects of these pastoral communities has been generated in various studies elsewhere, socio-economic studies are scanty. No concerted efforts had heretofore been made to study the economics of dairying among the Gujjars, who are well known for rearing buffaloes only, particularly with reference to various important economic parameters like marketing of milk. With a view to identifying the factors responsible for marketed surplus of milk, marketed surplus functions were fitted separately for different types and categories of milk producers in the study area.

## MATERIALS AND METHODS

Four districts of the Jammu region were selected purposively and from each district two blocks were also selected purposively. One village was selected purposively from each block: that in which the population of the Gujjars involved in rearing of buffaloes was highest. From each block 25 Gujjar dairy farmers were selected randomly to constitute a total sample size of 200 farmers,

based on the classification into three groups on the basis of number of milch buffaloes (cube root frequency method) namely small farms (up to 5), medium farms (6-10) and large farms (10 & above). Primary data on marketing of milk were collected by the personal interview method with the help of a structured and pre-tested schedule.

The quantity of milk available for sale depends upon a number of factors like production, price demand, etc. Milk being a perishable cannot be stored for future date for sale and therefore, depend upon immediate demand. Although a large number of studies have been carried out to develop marketed surplus functions in agricultural commodities, little empirical evidence is available on the marketed surplus of milk. Therefore, in this section the empirical nature of relationship between the marketed surplus of milk and its determinants was examined. The explanatory variables considered to develop the marketed surplus function were total milk production, family size, education level of the head of the family<sup>1</sup>, number of milch animals and price of milk. The education status (literate or illiterate) of the head of the household was considered as a variable affecting the marketed surplus of milk. A critical examination of zero order correlation matrix among explanatory variables revealed the absence of multicollinearity problem. The estimated marketed surplus function for milk in respect to Jammu, Udhampur, Rajouri, Poonch and overall are reported in Table 1.

The following model was employed to find the marketed surplus for different households in the present study.

$$MS = f(X_1, X_2, X_3, X_4, X_5)$$

MS = Marketed surplus of milk per household per day in kg

$X_1$  = Total milk production per household in kg

- X<sub>2</sub> = Family size of household
- X<sub>3</sub> = Education level of head of household
- X<sub>4</sub> = Average price of milk
- X<sub>5</sub> = Number of milch animals per household

<sup>1</sup>The scale prepared by Trivedi and Pareek (1963) to measure the education level of rural families was used, the details of which are given below:

Education	Weightage
Illiterate	0
Can read only	1
Can read and write	2
Primary	3
Middle	4
High School	5
Intermediate and above	6

To work out the marketing cost and price spread during the marketing of milk, the lot method was used. A specific lot or consignment was selected and chased through the marketing system until it reached the ultimate consumer. The cost and margin involved at each stage was assessed (Acharya and Aggarwal, 1998). This method is appropriate for such perishable commodities as fruits, vegetables and milk because the lag between the time the commodity enters the marketing system and time of its final consumption is very small.

## RESULTS AND DISCUSSION

### Marketed surplus function for buffalo milk

A perusal of Table 1 indicates that the production function for marketed surplus of milk (variables included in the regression model explain more than 91 percent of the total variation for milk)

in Jammu, Udhampur, Rajouri, Poonch districts and the overall Jammu region with R<sup>2</sup> values at 0.956, 0.925, 0.996, 0.917 and 0.969 respectively, was statistically significant meaning that about 95 percent, 92 percent, 99 percent, 92 percent and 96 percent, respectively, of the total variation in milk production in the respective districts was explained by the independent or explanatory variables under consideration.

The functional analysis revealed that milk production was found significant at the 1 percent level of probability in Jammu, Udhampur, Rajouri and Poonch districts and the overall Jammu region. The value of regression coefficients for milk production were 1.101, 0.971, 0.924, 1.068 and 0.979, respectively. The regression coefficient for price of milk was significant and positive in Jammu district at the 5 percent level of significance with the value at 0.193, whereas in the overall Jammu region price of milk was found statistically significant at the 5 percent level of significance with values at 0.138. The values for family size in Rajouri (0.016) and Poonch (0.015) districts, for education status in Jammu (0.002), Rajouri (0.001) Poonch (0.001) and overall (0.083) and for number of milch animals in Udhampur (0.039), Rajouri (0.083) and overall (0.059) were, however, positive but not significant.

The results of marketed surplus function (Table 1) showed that the values of regression coefficients of milk production had a positive and significant impact on the marketed surplus of milk in all the four districts and the overall Jammu region indicating thereby that one percent increase in the use of this inputs after keeping the use of all other inputs constant, the marketed surplus could increase by 1.101 percent in the case of Jammu district, 0.971 percent in the case of Udhampur district, 0.924 percent in the case of Rajouri,

1.068 percent in the case of Poonch district and in the case of overall Jammu region, the increase in marketed surplus of milk was 0.979 percent. This clearly implies that as the milk production increases, there will be more marketed surplus of milk. The quantity of marketed surplus of milk also increases with the increase in the price of milk in the case of Jammu district and the overall Jammu region, where the price of milk shows a positive and significant impact on the marketed surplus of the milk. In the other districts; the sign for the price of milk was however positive but did not show any significant impact. The other variables like family size did not show any significant impact on the marketed surplus. However, their signs were negative in some cases, which clearly indicated that as the family size increases, the marketed surplus of milk will decrease. The effect of educational status of the head of the household did not have any significant influence on the marketed surplus as most of the heads of household were illiterate. All the variables included in the regression model explained more than 90 percent of variation. These findings are supported by the findings of Dhaka *et al.* (1998) and Das (2004).

#### **Production, consumption and marketed surplus of buffalo milk in Jammu region**

Production as well as marketed surplus was highest in large farms followed by medium farms and small farms (Table 2). On average, the daily milk production per house hold in different groups was 21.44, 37.13, 85.21 and 34.85 litres for small, medium, large and overall farms, respectively, of which 20.25, 35.34, 82.35 and 33.29 litres was sold, representing marketed surpluses of 94.45, 95.18, 96.64 and 95.52 percent on small, medium, large and overall farm sample households in the Jammu region. The per capita milk consumption was found

to be 289, 363, 469 and 335 gm in small, medium, large and overall farms, in Jammu Region.

This shows that in Jammu region overall production of milk was 34.85 litre per household per day, in which large farms had the more production per day as compared to other groups, which was due to the large number of milking animal kept by large farms in Jammu district. These findings are supported by the findings of Prabhakaran and Ramasamy (1984) and Kumar (2006). The marketed surplus of milk per day per household was found to be 33.29 litres. The overall marketed surplus measured in terms of ratio to total milk production was 95.53 percent for the overall Jammu region, which was highest in large farms. With the increase of herd size, marketed surplus of milk also increased, which was observed in all the districts of the overall Jammu region. More milk was retained by small farms and medium farms than large farms due to big family size. The per capita consumption of milk in Jammu region was found to 335 gm per day.

#### **Marketing cost and price spread in buffalo milk marketing**

The following channels were usually found for the distribution of milk from producer to consumer in the Jammu region.

Producer - Consumer,

Producer - Vendor - Consumer

Producer - Vendor - Processor (sweet shop)

In the first channel, either consumers themselves go to take milk from the producers' houses or producers themselves go to the houses of consumers to sell the milk. In the second channel, a vendor collects milk from the producer and supplies it to the consumers. In the third channel, the vendor collects the milk from the producers and supplies it to the processor (sweet shop) for making different

Table 1. Marketed surplus function for milk for the Jammu region.

Districts	Constant Term	Regression Coefficients					R <sup>2</sup>
		Milk production (X <sub>1</sub> )	Family size (X <sub>2</sub> )	Education status (X <sub>3</sub> )	Price of milk (X <sub>4</sub> )	No. of milch animals (X <sub>5</sub> )	
<b>Jammu</b>	-0.845	1.101** (0.049)	-0.025 (0.021)	0.002 (0.001)	0.193* (0.091)	-0.073 (0.051)	0.956
<b>Udhampur</b>	-0.007	0.971** (0.037)	-0.013 (0.014)	0.001 (0.001)	0.008 (0.044)	0.039 (0.040)	0.925
<b>Rajouri</b>	0.006	0.924** (0.058)	0.016 (0.015)	0.001 (0.001)	0.023 (0.070)	0.082 (0.061)	0.996
<b>Poonch</b>	-0.675	1.068** (0.075)	0.015 (0.010)	0.001 (0.001)	0.142 (0.089)	-0.057 (0.082)	0.917
<b>Overall</b>	-3.702	0.979** (0.014)	-0.029 (0.039)	-0.083 (0.070)	0.138* (0.081)	-0.059 (0.120)	0.969

Note : Figure in parentheses indicate the standard error of regression coefficients.

\* Significant at 5 percent level.

\*\* Significant at 1 percent level.

Table 2. Production, consumption and marketed surplus of milk in the Jammu region (litres Household/day).

Farm size groups	Avg. no. of milch animal	Milk production	Milk surplus marketed	Milk Marketed as % to milk production	Per capita consumption (litres/day)
<b>Small</b>	4.27	21.44	20.25	94.44	0.289
<b>Medium</b>	8.26	37.13	35.34	95.18	0.363
<b>Large</b>	20.27	85.21	82.35	96.64	0.469
<b>Overall</b>	7.65	34.85	33.29	95.53	0.335

milk products.

### **Marketing cost, marketing margin and price spread in marketing of buffalo milk in Jammu region**

Table 3 showing the marketing of milk in Jammu region revealed that producer's share in the consumer rupee was 93.14 percent, 88.78 percent and 86.17 percent in the first (Producer-Consumer), second (Producer -Vendor - Consumer) and third (Producer - Vendor - Processor) marketing channels, respectively, whereas marketing cost was 6.86 percent in the case of the first channel, 6.12 percent in the case of the second channel and 7.45 percent in the case of the third channel, respectively. The marketing margin was found nil in the first channel, while it was 5.10 percent and 6.38 percent for the second and the third channels, respectively.

It was observed in marketing cost and price spread of the overall Jammu region that 93.14 percent of consumer rupee was received by the milk producer in first marketing channel (Producer-Consumer), which was the maximum share of the consumer rupee, while in third marketing channel (Producer-Vendor-Processor), the minimum producer's share in consumer rupee was found (86.17%). The producer's share in the consumer

rupee was maximum in first marketing channel due to the absence of any marketing intermediary. Maximum marketing cost was found in third channel whereas minimum marketing cost was found in the case of the second channel. The marketing cost in the first marketing channel in the overall Jammu region was high due to high transportation cost incurred by the producers in Udhampur and Poonch districts. The maximum marketing margin was found in the third channel.

The marketed surplus function for milk for the Jammu region indicated that milk production and the price of milk had a positive and significant impact on the marketed surplus of milk. This clearly implies that as the milk production increases, there will be more marketed surplus of milk and the quantity of marketed surplus will also increase with the increase in the price of milk. The production as well as marketed surplus in absolute terms was highest in large farms, followed by medium farms and small farms.. The per capita consumption was found to be higher in large farms. In estimating the cost of the marketing of milk in the overall Jammu region, it was found that the producer's share in the consumer's price was maximum in the first channel followed by the second and the third. Marketing cost and marketing margin was maximum in the third channel.

Table 3. Marketing cost, marketing margin and price spread of milk in the Jammu region (in percentage).

Particulars	Marketing Channels		
	Producer to consumer	Producer to vender to consumer	Producer to vender to processor(sweet shop)
<b>Producer's share</b>	93.14	88.78	86.17
<b>Marketing cost</b>	6.86	6.12	7.45
<b>Marketing margin</b>	0.00	5.10	6.38
<b>Consumer's price</b>	100.00	100.00	100.00

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