RESEARCH ARTICLE

A Study on marketed surplus and disposal pattern of milk in the North-Eastern state of Nagaland

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Abstract The present study was undertaken during 2010-11 to estimate the marketed surplus and existing disposal pattern of milk in Nagaland. Overall 12.26 litres of milk were produced per day per household out of which 1.74 litres were consumed per day per household. Thus, the overall marketed surplus of milk was 10.52 litres per day per households which was 85.83 per cent of the total milk produced. So, the consumption of milk across different household categories (small, medium and large) was very low resulting in relatively higher marketed surplus of milk. It was found that total milk produced had a positive and significant (P <0.01) effect on the marketed surplus of milk. It was found that relatively higher percentage of marketed surplus of milk was disposed off to unorganised sector (consumers) than Milk Producers Co-operative Societies due to relatively lower price being paid by cooperatives based on fat and SNF percentage. The study suggested the need for more government incentives to encourage the farmers for commercial dairying as this would in turn increase the production and marketed surplus of milk for higher return.

Keywords: Consumer, marketed surplus, disposal pattern, milk producers’ co-operative societies (MPCSs)

Introduction

In India, dairying plays an important role in the development of rural economy by providing gainful employment and regular income flow to small and marginal farmers, agricultural labourers and other deprived sections. The development of dairying therefore has a direct impact on the economic conditions and living standards of the poor. India has become the world’s single largest milk producing country with the milk production of 132.40 million tonnes during 2012-13 (Basic Animal Husbandry and Fisheries Statistics, 2014). However, the development of dairy sector has been uneven across the states especially the north-eastern states lagging far behind in terms of production and productivity of milch animals. In North-East, Nagaland is one of the states, lagging far behind in dairy development. In Nagaland, there were about 129 thousands cross-bred cattle, 106 thousands indigenous cattle and 32 thousands buffaloes with the total livestock population of 911 thousands (19th Livestock Census, All India Report 2012) which was only 3.42 per cent and 0.18 per cent of the total livestock population of all the North-Eastern states and India, respectively. Milk production was about 78.66 thousands tones (Basic Animal Husbandry and Fisheries Statistics, 2014) which were only 6.37 per cent and 0.06 per cent of the total milk production of all the North-Eastern states and India, respectively. Lack of scientific knowledge about dairying, small herd size, lack of cooperative societies and inadequate feeds and fodder availability have been the major reasons for poor productivity of milch animals in the state. Further, people of the state are mainly non-vegetarian preferring different types of meat as unlike other parts of India. Consumption of milk and milk products was relatively lower in Nagaland in comparison to Northern states of India due to poor availability of milk and habit persistence towards meat. However, with the increase in per capita
income, the demand for milk and milk products has been gradually growing which has in turn been widening the scope of profitable dairy farming in the state. Dairy farmers have now been searching for profitable disposal of their milk to meet the growing demand. Keeping these in mind the present investigation was undertaken to study the amount of marketed surplus and disposal pattern of milk across different herd size categories of households as these significantly impact the profitability of dairying. Further, an attempt was also made to examine the factors which affect the marketed surplus of milk the state.

Data and Methodology

In the present study, multistage random sampling was adopted for selecting the final milk producing households. Out of 11 districts of Nagaland, Kohima and Dimapur districts were selected purposively. Further, Kohima and Jakhama blocks from Kohima district and Dhansiripar and Medziphema blocks from Dimapur district were selected randomly. Thus, a sample of 120 households was drawn for the present study. Then from each block a cluster of villages were selected randomly. Finally, 30 households were selected randomly from each cluster of villages. The households were post stratified into three herd size categories namely small (1-2 milch animals), medium (3-4 milch animals) and large (>5 milch animals). Thus, the distribution of total 120 households was 38, 64 and 18 households for small, medium and large herd size categories respectively.

Primary data on different aspects of dairying like herd size of milch cow, milk production, milk consumption, selling price and disposal pattern of milk, family size, education of family head etc. were collected on during 2010-11.

Marketed surplus

Marketed surplus of milk in the present study was worked in terms of the actual quantity of milk sold by the producer irrespective of their requirements for family consumption and other requirements.

Marketed surplus function

The specification of the marketed surplus function used in the study for the functional analysis is given below:

\[ Y = f (X_1, X_2, X_3, X_4) \]

Where, \( Y \) = Marketed surplus of milk (Kg/day)

\[ X_1 = \text{Total milk produced (Kg/day)} \]

\[ X_2 = \text{Family size} \]

\[ X_3 = \text{Education of the head of family} \]

\[ X_4 = \text{Price of milk (Rs./litre)} \]

Linear model was fitted for the estimation of marketed surplus function in the present study.

Disposal pattern

The information regarding quantity of milk consumed at home, quantity of milk sold and the agency to whom sold i.e., co-operative societies or directly to consumers were collected and their percentages were worked out.

Results and Discussion

Marketed surplus of milk

Marketed surplus is the actual quantity of milk sold by the farmer. Various factors such as total milk production, family size, educational status of the head of household, price of milk etc. were considered to examine their influence on the marketed surplus of milk.

The study revealed that the overall milk production was 12.26 litres per day per household while for small, medium and large household categories milk production was 8.32, 12.63 and 19.28 litres per day per household, respectively (Table 1). Overall, 1.74 litres of milk per day per household were consumed while for small, medium and large household categories, milk consumption was 1.68, 1.73 and 1.89 litres per day per household, respectively. Thus, the overall marketed surplus was 10.52 litres per day per household which was 85.81 per cent of the total milk produced. For small, medium and large household categories, marketed surplus were 6.64, 10.90 and 17.39 litres per day per household which were 79.81, 86.30 and 90.20 per cent of the total milk produced by the respective household categories. The findings observed on marketed surplus in the present study were in conformity with the findings of Agarwal et al. (2009) who reported 77.00 per cent to 94.00 per cent marketed surplus in different agro-climatic zones of Gujarat and Maharashtra. However, Singh (2007) in Imphal West district of Manipur reported 96.00 per cent of marketed surplus which is relatively more than the present observation.
Table: 1. Production, consumption & marketed surplus of milk

<table>
<thead>
<tr>
<th></th>
<th>Small</th>
<th>Medium</th>
<th>Large</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milk produced</td>
<td>8.32</td>
<td>12.63</td>
<td>19.28</td>
<td>12.26</td>
</tr>
<tr>
<td>Milk consumed</td>
<td>1.68</td>
<td>1.73</td>
<td>1.89</td>
<td>1.74</td>
</tr>
<tr>
<td>Marketed surplus</td>
<td>6.64(79.81)</td>
<td>10.90(86.30)</td>
<td>17.39(90.20)</td>
<td>10.52(85.81)</td>
</tr>
</tbody>
</table>

Figures in parentheses indicate percentage of marketed surplus to total milk produced.

Table: 2. Estimates of marketed surplus function

<table>
<thead>
<tr>
<th>Form of production function</th>
<th>Constant</th>
<th>Total milk produced</th>
<th>Family size</th>
<th>Regression coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linear</td>
<td></td>
<td>0.64**(0.126)</td>
<td>0.04(0.278)</td>
<td>-0.05(0.286)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.02(0.052)</td>
</tr>
</tbody>
</table>

\[ R^2 = 0.711, \text{ N= No. of households = 120, ** Significant (P<0.01). Figures in parentheses indicate the standard error of estimates.} \]

Table: 3. Disposal pattern of milk

<table>
<thead>
<tr>
<th></th>
<th>Small</th>
<th>Medium</th>
<th>Large</th>
<th>Overall</th>
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</thead>
<tbody>
<tr>
<td>MPCS (%)</td>
<td>47.22</td>
<td>37.75</td>
<td>42.49</td>
<td>40.82</td>
</tr>
<tr>
<td>Local consumers (%)</td>
<td>52.78</td>
<td>62.25</td>
<td>57.51</td>
<td>59.18</td>
</tr>
<tr>
<td>Total marketed surplus (lit./day/household)</td>
<td>6.64</td>
<td>10.90</td>
<td>17.39</td>
<td>10.52</td>
</tr>
</tbody>
</table>

Marketed surplus function

The coefficients of estimated parameters of marketed surplus function are presented in Table 2. The \[ R^2 \] of the fitted marketed surplus function was found to be 0.711 which in turn implied that 71.10 per cent of the total variation in marketed surplus could be explained by the five explanatory variables included in the model. The estimated marketed surplus function revealed that out of four explanatory variables i.e., total milk produced, family size, education of the head of household and price of milk, the total milk produced had a positive and significant (\( P<0.01 \)) effect on the marketed surplus of milk which is in conformity with the findings of Chouhan and Sharma (1990) who also reported positive and significant effect of total milk production on marketed surplus in a study carried out in Bareilly (U.P.). The regression coefficients associated with family size and price of milk showed positive but non-significant effect on the marketed surplus of milk.
whereas regression coefficient associated with education of the head of the household was negative and non-significant.

Disposal pattern of milk

The success of dairy farming depends upon the marketing facilities available to the producers’ farmers. Since milk is a highly perishable commodity, it requires quick disposal or conversion into products at the farm level. Therefore, it is important to find out how the marketed surplus of milk was disposed off. In the present study, there were only two channels through which the marketed surplus of milk was disposed off. These channels were:

a. Producer – Milk Producers Co-operative Societies (MPCSSs).

b. Producers – Local Consumers.

The study revealed that overall 59.18 per cent of the total marketed surplus was disposed to unorganised sector i.e., local consumers while 40.82 per cent of the total marketed surplus was disposed to Milk Producers Co-operative Society (Table 3). Further, 47.22, 37.75 and 42.49 per cent of the total marketed surplus for small, medium and large household categories were disposed off to Milk Producers Co-operative Society while 52.78, 62.25 and 57.51 per cent of the total marketed surplus for small, medium and large household categories were disposed off directly to local consumers. Chandra and Agarwal (2000) in Farrukhabad district of Uttar Pradesh and Vedamurthy and Chouhan (2011) in Shimoga district of Karnataka also reported that larger proportion of the marketed surplus of milk was disposed off through unorganised sector (consumers) than Milk Producers Co-operative Societies due to relatively lower price being paid by cooperatives based on fat and SNF percentage. Hence, there is a need for breed improvement and quality milk production for higher return from dairying in the state.

Conclusions

The study revealed that consumption of milk across different household categories was very low as major proportion of the milk was sold to fulfill household expenses. Further, total milk produced had a positive and significant effect on the marketed surplus of milk. However, the absolute quantity of marketed surplus across all the three household categories was very low. Therefore, the study suggested the need for more government incentives to encourage the farmers for commercial dairying as this would in turn increase the production and marketed surplus of milk for higher return. It was found that relatively higher percentage of marketed surplus of milk was disposed off to unorganised sector (consumers) than Milk Producers Co-operative Societies due to relatively lower price being paid by cooperatives based on fat and SNF percentage. Hence, there is a need for breed improvement and quality milk production for higher return from dairying in the state.

References


