This chapter presents the methodological details of selection of the study area, sampling technique used for the selection of farmers, collection of data and analytical tools.

**Sampling design:**

Multistage stratified random design was used for the selection of ultimate unit of the sample.

**Selection of the district:**

The district, Sultanpur was selected purposively because of convenience of the investigator.

**Selection of the block:**

The Sultanpur district of Uttar Pradesh comprises twenty three blocks, out of these twenty three blocks all the blocks of Sultanpur district were arranged in descending order of the magnitude of the milk production and two blocks namely, Lambhua and Jaigingpur, which enjoyed having highest milk production, have been selected purposively for this study.

**Selection of the villages:**
A list of all the villages of selected blocks were prepared with the help of block personnel and five villages from each block were selected randomly. Thus total 10 village were selected for the study.

Selection of milk producer:

A list of all the milk producers of 10 selected villages were prepared and categorized in the three size of group, viz..

a. Small milk producer (1 milch animal)

b. Medium milk producer (2-3 milch animals)

c. Large milk producer (4 and above milch animals)


Table 3.1: Village wise milk producer under different size group

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Herd size group</th>
<th>Block (I) Jaisingpur Villages</th>
<th>Block (II) Lambhua Villages</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Ahirauli</td>
<td>Belhari</td>
<td>Birajpur</td>
</tr>
<tr>
<td>1</td>
<td>Small</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>Medium</td>
<td>4</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>Large</td>
<td>5</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>12</td>
<td>11</td>
<td>14</td>
</tr>
</tbody>
</table>

From the list of milk producer of 10 villages of all three categories (i.e. Small, Medium and large) 40 milk producer from each category of milk producer were selected randomly for indepth study from selected 10 villages. In this way 120 milk producers were selected finally.

Method of inquiry:
The primary data were collected from sample households by survey method through personal interview on well structured and pretested schedule, while secondary data were collected from books, Journals, reports and records of Parag cooperative office and records of district data enquiry deptt. and block, Head quarters.

**Period of inquiry:**

The primary data was collected on prices, inputs, outputs etc. related to the agricultural year 2007-08.

**Analytical tools:**

Both, the tabular and statistical analysis were used, weighted average was worked out for interpretation of data with the help of falling formula:

\[
\text{Weighted average} = \frac{\sum w_i x_i}{\sum w_i}
\]

Where,

\(x_i = \text{Variable}\)

\(w_i = \text{Weighted of variable}\)

**Cropping intensity:**

\[
\text{C.I.} = \frac{\text{Total cropped area}}{\text{Net sown area}} \times 100
\]

**Breakeven analysis:**

Breakeven point was employed to work out breakeven out put for a cow and buffalo on different heards size groups.

\[
\text{BEP} = \frac{\text{TFC}}{\text{ASP} - \text{AVC}}
\]

Where,

\(\text{BEP} = \text{Breakeven point in liters of milk,}\)

\(\text{TFC} = \text{Total fixed cost per milch animal in rupees.}\)
ASP = Average selling price per litre of milk and
AVC = Average variable cost per litre of milk.
Marketing costs and marketing margins were worked out using the
fallowing formula –

\[ T_c = cp - \sum_{i=1}^{n} Me_i \]

\( T_c = \) The total cost of marketing,
\( cp = \) The cost incurred by the producer in marketing of his produce,
\( Me_i = \) The marketing costs incurred by the 1\(^{th}\) middlemen or traders.

Marketing margin:

\[ Am = P_m a - (P_b a + Me) \]

\( Am = \) The absolute margin of the middlemen or traders.
\( P_m = \) The selling price of the middlemen or traders.
\( P_b = \) The buying price of the middlemen or traders.
\( Me = \) The marketing costs of the middlemen or traders.

The producers share in the consumer's rupee was worked out as below –

\[ Po = \frac{P_p}{Pr} \times 100\]

\( Po = \) The producer's share in the consumer's rupee.
\( P_p = \) The producer's price for their produce.
\( Pr = \) The price paid by the consumer's or sale price of the retailers.

Marketing channels:

For identifying the marketing channel practices in the study area, survey
method was used. It was found after survey that following channels were
practices in the study area.

I – Milk producer – Consumer
II - Milk producer – Halwai-consumer
III - Milk producer – milk vendor – Halwai-Consumer
IV - Milk cooperative society – Cooperative milk plant - Consumer
Price spreads:
Price spreads were studied at the point of time in the selected markets. The price for the purposes was calculated through the mode methods. In the mode methods, model price of different levels were obtained to work out the gross margin of various agencies. To arrive at the net margin, the cost incurred by the concerned agencies were deducted from the gross margin.

Marketing efficiency:
The marketing efficiency in milk marketing through different channels was compared by using the following formula –

\[ ME = \frac{V}{I} - 1 \]

Where,
\[ ME \] = Marketing efficiency
\[ V \] = Value of the marketed milk in rupees.
\[ I \] = Total costs incurred in the marketing process of milk in rupees.