Chapter-III

Research Methodology
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RESEARCH METHODOLOGY

The value and utility of any research study considerably depends on its research design and methodology. Hence, the efforts were made to follow systematic approach and a standard research methodology with most appropriate analysis. Major components of the methodology employed involve selection of potato growers, method of data collection, analytical procedure and technique used. The design to conduct the study was developed according to nature of specific objectives as outlined in the first chapter.

Methodology, in fact has a great bearing on the reliability of the results arrived at the end and as such constitutes the firm foundation of the entire edifice of the research work. It refers to providing information regarding decisions of what, where, when, how much and by what means the study was carried out.
This chapter mainly deals with the research methodology applied in the present study to fulfill the main objectives for which it was planned and thought to be carried-out under the set assumption (hypothesis). Research methodology focuses the whole process of conducting research. For the sake of convenience, the methodology adopted in the course of investigation of this study has been summarized under the following heads.

1. Research design
2. Area under study
3. Plan of work and Sampling techniques.
4. Method of Investigation,
5. Processing and analysis of data, and
6. Reference Period

3.1 Research Design:

The present study is based on the "descriptive" type of research design in which "Ex-post facto" planning stage and specific objectives were set for the inquiry. In the light of the objectives, the technique of the investigation to be adopted, tools to be used and the pattern of statistical analysis to be followed were
decided. Further, the scheme of the presentation of the study was developed and given a definite shape to match with the outline of the study. The study was conducted in the light of the set objectives and under framework of the adopted outline.

In order to understand the findings of the study in the wider context and to evaluate their relevance in the light of available knowledge on the subject, an effort has been made through review of the proper and relevant literature related to the previous researches, which have been conducted in this field. To provide scientific basis to the study, a proper hypothetical framework was also developed, which provided a definite direction and specific scope to the investigation. The findings of the study have been properly discussed in the light of available research material on the subject and subsequently summarized in the light of all the proper aspects covered within the scope of the study.

3.2 Area under study:

The present study entitled; "A Study of Economics of Production and Marketing of Potato in Uttar Pradesh with
Special Reference to District Auraiya" is confined to Auraiya district, one of the prominent districts of potato-producing region in North India, often termed as the potato belt of the country, stretches from Kanpur to Agra, and accounts for over 8 per cent of the country's potato output. Being a high-productivity crop, the farmers of this region prefer growing potatoes instead of other seasonal crops.

3.3 Plan of work and Sampling techniques:

Commensurate with the objectives of the present study, the multi stage sampling technique has been applied. The sampling process in this study consists of three stages viz. selection of blocks, selection of villages and selection of sample cases. To study the marketing of potato one main market/mandi and market functionaries working in the mandi were also selected.

3.3.1 Selection of Blocks:

Auraiya district consists of 7 development blocks viz. Erwa Katra, Bidhuna, Achhalda, Sahar, Ajitmal, Bhagyanagar, and Auraiya. Among these blocks Ajitmal, Bidhuna and Sahar occupied about 20, 19 and 18 per cent
Fig. 1 Map showing the blocks of Auraiya District
of the total area under potato in the district. Out of these top three blocks two blocks Bidhuna and Sahar were selected randomly. These blocks have better economic growth and production of potato and hence accomplish all the essential requirements of such investigation.

3.3.2 Selection of Villages:

At the second stage of sampling, the list of all the villages falling under selected blocks Bidhuna and Sahar was obtained from the block headquarters and arranged in alphabetical order. Out of such list 5 villages from each block were selected randomly to make the study comprehensive. The names of the selected villages are shown in table 3.1.

3.3.3 Selection of the Cases:

A list of all the potato growers in all the selected villages was prepared and categorized into three groups on the basis of their size of holding i.e. (1) Size-group I (up to 1 ha.) (2) Size group II (1 to 2 ha) and (3) Size group III (above 2 ha). After categorizing the farmers into different size-groups the selection of ultimate sampling units was done according to probability preparation to the total
number of farmers falling in each category fixing the probability to give samples of 100 farmers. The village-wise distribution of sample farmers falling under various size-groups in both the blocks is given in Table 3.1.

Table 3.1: Holding-Wise Number of Selected Farmers and Villages of Block Bidhuna and Sahar of District Auraiya.

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Name of Block/Village</th>
<th>Number of selected farmers</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Group-I (0-1 ha.)</td>
<td>Group-II (1-2 ha.)</td>
</tr>
<tr>
<td>A</td>
<td>Block: Bidhuna</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Kharagpur</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>2.</td>
<td>Sabahad</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>3.</td>
<td>Bansai</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>4.</td>
<td>Belpur Bela</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>5.</td>
<td>Chadarpur</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Sub total (A)</td>
<td>29</td>
<td>15</td>
</tr>
<tr>
<td>B</td>
<td>Block: Sahar</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Piprouli shiv</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>7.</td>
<td>Harbanspur</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>8.</td>
<td>Madok</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>9.</td>
<td>Bahadurpur</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>10.</td>
<td>Gopalpur</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Sub total (B)</td>
<td>28</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>Total (A+B)</td>
<td>57</td>
<td>28</td>
</tr>
</tbody>
</table>

3.3.4 Selection of Market and Market functionaries:

For the study of marketing of potato, one major market/mandi was selected in the study area. All the functionaries operating in that market were studied to solve the purpose of the study.
For analysis of the marketing costs, margins and producer's share in consumer's rupee, all the sample potato growers bringing their produce in the market, irrespective of their farm size were interviewed for the present study.

3.4 Method of Investigation:

3.4.1 Collection of Primary Data:

The primary data were collected by direct personal interview to the selected potato growers with the help of pre-prepared and well tested questionnaires and schedules. During the period of enquiry, several visits to the selected villages and sample potato growers were made for collection of data keeping the view the convenience of the respondents.

The accuracy of data thus collected was ensured at each step by establishing a close rapport with the farmers, interviewed during the investigation. Farmers were interviewed personally by the researcher visiting several times at their places in the village. For collecting the correct information from the farmers, the questions put to them were made quite comprehensive, while
interviewed. It was made sure that questions were correctly understood by the farmers and they were encouraged to express their opinion freely and frankly. To maintain the reliability of the data collected during the field survey, the criss-cross method was found useful. During the investigation, various kinds of cross checks were made to ensure the reliability of the information gathered.

3.4.2 Collection of Secondary Data:

The secondary data were collected from published materials i.e. Journals, Books, Bulletins, Reports etc. and from the Records of the Block head quarter, Tehsil, District Department of Information, District Statistical office and Lekhpals Records, etc.

3.5 Processing and Analysis of Data:

After completion of the field survey, a systematic editing of the completed schedules was done to remove the mistake committed (if any). After editing, the answers were classified into some useful categories and gave them suitable titles.

3.5.1 Tabulation and Tabular Analysis:
The data thus collected were compiled and tabulated systematically. Averages and percentages were worked out for most of the information such gathered. In most of the cases, simple tabular analysis was followed.

3.5.1.1 Measures of farm profits:

Standard cost and income measures were used to estimate farm profits. The cost concepts and the items of cost included under each concept are given as follows-

a. Cost concepts:

Cost A\(_1\): All actual expenses (both cash and kind) incurred in the production by the owner operator. These include

- Value of hired human labour
- Value of owned machinery labour
- Hired machinery charges
- Value of seed (both farm produced and purchased)
- Value of insecticides/pesticides
- Value of manure (owned and purchased)
- Value of fertilizer
- Depreciation on implements and farm buildings
- Irrigation charges
- Land revenue
- Interest on working capital
- Miscellaneous expenses

Cost $A_2$: Cost $A_1 +$ rent paid for leased-in land

Cost $B_1$: Cost $A_1 +$ interest on value of owned capital assets (excluding land)

Cost $B_2$: Cost $B_1 +$ rental value of owned land (net of land revenue) and rent

Cost $C_1$: Cost $B_1 +$ imputed value of family labour

Cost $C_2$: Cost $B_2 +$ imputed value of family labour

Cost $C_3/D$: Cost $C_2 +10\%$ of Cost $C_2$ as managerial cost

Using these cost concepts the following income measures were used

i. Farm Business Income $=$ Gross Income $-$ Cost $A_2$

ii. Family Labour Income $=$ Gross Income $-$ Cost $B_2$

iii. Net Income $=$ Gross Income $-$ Cost $C_3$

2) **Weighted Average:**

The average values refer to the averages of the aggregate value.

$\text{Weighted average} = \frac{\sum_{i=1}^{n} W_i X_i}{\sum_{i=1}^{n} W_i}$
\[
\sum_{i=1}^{n} \frac{W_i X_i}{\sum_{i=1}^{n} W_i}
\]

Where,

\(X_i = \text{Arithmetic mean of } i^{th} \text{ group}\)

\(W_i = \text{Number of items in the } i^{th} \text{ group}\)

3.5.1.2 Marketing of Potato:

1. Market margins:

a. Absolute margin: It is simply the difference between selling price and buying price.

b. Net margin: From the absolute margin deduct real market expenses to get margin.

a. Percentage margin = \(\frac{\text{Absolute Margin}}{\text{Selling Price}} \times 100\)

b. Mark up = \(\frac{\text{Absolute Margin}}{\text{Buying price}} \times 100\)

c. Price Spread = \(\frac{\text{Absolute Margin of Channel}}{\text{Price Paid by Consumer}} \times 100\)

d. Marketing efficiency (ME):

Marketing efficiency in different channels was computed by using Shepherd's formula.
\[
ME = \frac{V}{I} - 1
\]

Where,  
\( ME \) = Index of marketing efficiency  
\( V \) = Value of goods sold (consumer's price)  
\( I \) = Total marketing cost

e. **Cost of Marketing:**

Cost of marketing of farmers as well as intermediaries was calculated. The farmers incur (i) Transportation charges. (ii) Packaging. (iii) Traders commission, as marketing cost.

f. **Producer's Share in Consumer's Rupee:**

It is the share of producer, which he actually gets out of the amount paid by consumer for his produce. It has been calculated as:

\[
P = \frac{C - M}{C} \times 100
\]

Where,  
\( P \) = Producer's share in consumer's rupee  
\( C \) = Price paid by consumer  
\( M \) = Total marketing cost.
3.3.2 **Imputation procedures for inputs used:**

Some of the inputs used in the production process come from family resources. In computing the cost of cultivation, it is necessary to impute the value of these owned inputs. The procedure adopted for deriving imputed values of these inputs is as below-

i. **Family Labour:**

Family labour is imputed on the basis of the wage rate of permanent attached labour at the prevailing rate in the study area.

ii. **Owned machinery charges:**

Owned machine labour rate is imputed on the basis of the prevailing rate of hiring the machinery in the study area.

iii. **Depreciation on Implements and Farm buildings:**

Depreciation is charged following the straight-line method i.e., by dividing the present value of the asset (adjusted for scrap value) by expected remaining life.

iv. **Owned Seed:**
Farm produced seed is evaluated at prices prevalent in the village at the time of sowing.

v. **Farm produced manures:**

Evaluated at the rates prevalent in the village.

vi. **Rental value of owned land:**

Estimated on the basis of prevailing rents in the village for identical type of land or as reported by the sample farmers, subject to the ceiling of fair rents given in the land legislation of the U.P. state.

vii. **Interest on owned fixed capital:**

Interest on the present value of fixed asset (excluding land) such as farm buildings, implements and machinery, irrigation structures and equipment, and livestock (only draught animals) has been charged at the rate of ten per cent per annum.

viii. **Interest on own working capital:**

Interest is charged at the rate of 10.0 per cent per annum for half the period of the crop on the working capital i.e. cash or kind expenses (excluding items in respect of which payments are generally made after
harvest i.e. rent, land revenue etc.) incurred during the period of cultivation.

viii. **Kind payments and perquisites:**

The kind payments have been evaluated at prices prevalent in the village at the time such payments are made. Perquisites have been included in kind payments and evaluated at market price.

ix. **Main-product:**

The value of the main-product is imputed at the post harvest prices prevailing in the selected village.

3.5.3 **Allocation of joint costs to different farm enterprises:**

The expenditure incurred on, or imputed for some of the input items relate to the whole or a part of the farm. For computing the cost of cultivation of individual crops, it is necessary to allocate the joint costs among individual crops on the basis of certain principles. The following procedure is adopted-

Depreciation on farm buildings such as cattle shed, storage-shed etc. is allocated in proportion to the acreage
under the crops. In case, buildings are used only for a particular crop, the whole amount of depreciation is charged to that crop.

Depreciation on implements & machinery is allocated in proportion to the area under crops.

Rent for leased-in land, rental value of owned land, land revenue and interest on owned fixed capital is allocated in proportion to the area under different crops.

3.5.4 Procedure for evaluation of farm assets:

3.5.4.1 Owned and self cultivated land:

Self-cultivated land is evaluated at rates prevalent in the village/cluster duly taking into account the differences in type of soil, distance from the village and irrigates status etc.

3.5.4.2 Farm Buildings (cattle shed etc.):

Evaluated at prices prevailing in the village.

3.5.4.3 Implements and other farm machinery:

Evaluated at market prices.

3.6 Reference Period:

The reference period for the present study was agriculture year 2006-2007.