Chapter III

RESEARCH METHODOLOGY
Chapter-III

RESEARCH METHODOLOGY

The present chapter deals with the methodological aspect of present enquiry. The chapter has broadly been discussed under the following five heads:

1. Sampling technique
2. Method of enquiry and collection data
3. Period of enquiry
4. Analytical tools
5. Concept of income expenditure and savings.

Sampling Technique:

A three stage stratified random sampling technique was used to draw a sample of one block, 12 villages and 150 agricultural labour households in district Kanpur (Nagar).

Selection of Block:
Selection of the block formed the first stage of sampling. A list of all the 3 development blocks of district Kanpur (Nagar) was obtained and one block (Kalyanpur) was selected randomly.

Selection of the villages:
Selection of the villages formed the second stage of sampling. A list of all the 70 villages of Kalyanpur block was obtained and from this list 12 villages were selected randomly with the help of random table.
Selection of Agricultural Labourers:

For the third and final stage of sampling, a list of agricultural labourer households (with land and without land), for each of the selected village was prepared. The allocation of the labour households in each category i.e., with land and without land was kept in proportion to the number of labour household falling in each category of the selected villages. Thus in all a random sample of 150 agricultural labourer households (59 with land and 91 without land) was drawn from the universe of 12 villages in Kalyanpur block of district Kanpur Nagar.

The distribution of selected agricultural labourer households in each villages has been presented in Table III-1.

Table III-1  Distribution of selected agricultural labour households in the sample villages of Kalyanpur Block, Distt Kanpur Nagar

<table>
<thead>
<tr>
<th>Village</th>
<th>Number of agricultural labour households</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Withland</td>
</tr>
<tr>
<td>Bagdaundhi Bangar</td>
<td>8 (13.56)</td>
</tr>
<tr>
<td>Bagdaundhi Kacchar</td>
<td>7 (11.87)</td>
</tr>
<tr>
<td>Chak Ratanpur</td>
<td>1 (1.69)</td>
</tr>
<tr>
<td>Hindupur</td>
<td>6 (10.17)</td>
</tr>
<tr>
<td>Hora Bangar</td>
<td>5 (8.47)</td>
</tr>
<tr>
<td>Hora Kachhar</td>
<td>8 (13.56)</td>
</tr>
<tr>
<td>Kursouli</td>
<td>4 (6.78)</td>
</tr>
<tr>
<td>Naramau Kachhar</td>
<td>2 (3.39)</td>
</tr>
<tr>
<td>Nonian Purwa</td>
<td>3 (5.08)</td>
</tr>
<tr>
<td>Pargahi Bangar</td>
<td>6 (10.17)</td>
</tr>
<tr>
<td>Sambhalpur</td>
<td>2 (3.39)</td>
</tr>
<tr>
<td>Singhpur Kachhar</td>
<td>7 (11.87)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>59 (100.00)</strong></td>
</tr>
</tbody>
</table>
Method of Enquiry and Source of Data:

For the present study, survey method was adopted to conduct the enquiry. The data were collected by means of personal interviews with the selected respondents on the questionnaires and schedules prepared in advance. During the period of investigation a number of visits were made from time to time to collect the required informations. Keeping in view the convenience of the respondents, every possible case was taken to ensure the accuracy of informations. The information furnished by respondents were suitably supplemented and edited through personal observations and cross checks. The help of District Development Officer, Assistant Development Officer, Village Development Officer, Lekhpals, Gram Pradhan and other Village leaders of the study area was also sought for having counter check and more accurate informations.

As regards secondary data these were obtained and compiled from Lekhpals records, Block headquarters, District head quarters, Government publications, Agricultural Census Report, District Five Year Plans, Journals and other publications etc.

Period of Enquiry:

The study was conducted during the agricultural year 1994-95.

Prices of input and output:

The wages of agricultural labourers output prices and prices of other consumable goods were these, which prevailed at the time of enquiry in the selected villages.
Analytical Tools:

(i) Tabular analysis:

The tabular analysis was used to compare the values of employment, wage-rates, earnings of labourers etc.

(ii) Averages:

The averages given in present study refer to average of the aggregate values.

For the purpose of detailed analysis, agricultural labour households were classified into four categories based on their annual income. The four income groups were (i) below Rs. 10000, (ii) Rs. 10001-15000 (iii) Rs. 15001-20000 and (iv) Rs. 20001 and above.

(iii) Gini Ratio:

To measure the concentration of income on different income groups of with land and without land agricultural labour households, the gini ratio was used as given below:

\[
Gini \text{ ratio} = 1 - \sum_{J=1}^{n-1} \frac{P_J}{n} \left( Q_J + Q_{J-1} \right)
\]

Where,

- \( P_J \) = Proportion of households in \( J^{th} \) income groups
- \( Q_J \) = Cumulative proportion of income in \( J^{th} \) groups.
- \( Q_{J-1} \) = Cumulative proportion of income in \( (J-1)^{th} \) group
- \( n \) = Total number of income groups.
(iv) Marginal propensity to consume (MPC) and Marginal propensity to save (MPS):

The relationship between income consumption and saving was measured by the marginal propensity to consume and save. MPC has been measured by the following formula:

\[ \text{MPC} = \frac{d_c}{d_y} \]

Where,

\[ c = \text{Consumption} \]
\[ y = \text{Income (farm business income)} \]

and \( \frac{d_c}{d_y} \) is the first derivation of \( c \) with respect to \( y \) i.e., incremental change in income.

For measuring MPS the following formula was used:

\[ \text{MPS} = 1 - \text{MPC} \]

\[ = 1 - \frac{ds}{dy} \]

Where,

\[ 's' = \text{Saving} \]
\[ 'y' = \text{Income} \]

Production function analysis:

Production function analysis was carried out to examine the productivity and efficiency of different resources used in milk production on the sample households. Multiple regression analysis was done to examine the cost benefit relationship and productivity of inputs in milk production.

Cobb-Douglas type of production function was used for this analysis because of the higher \( R^2 \) value adequate fit of the data and
computational feasibility and the information regarding return to scale which it provides. The Cobb-Douglas type of production function took the form of:

\[ y = a x_1^{b_1} x_2^{b_2} \cdots x_n^{b_n} \]

Where,

- \( y \) = dependent variable (output value in Rs.)
- \( x_1 \) = 1\(^{st}\) independent variable (input value in Rs.)
- \( a \) = Constant
- \( b_1 \) = Production elasticity with respect to \( x_1 \)

The value of constant \((a)\) and of coefficient \((b_1)\) in respect of independent variables in the function have been estimated by using the method of least squares.

**Estimation of Marginal value product:**

The marginal value product of input was estimated by taking partial derivation of returns with respect to the input concerned at the geometric mean level of the inputs. The steps involved for the estimation of marginal value products of inputs have been given in chapter IX.

\[ \text{MVP} = \frac{b_i \bar{y}}{x_i} \]

- \( b_i \) = Production elasticity with respect to \( x_i \)
- \( \bar{y} \) = Geometrical mean value of \( y \) (output values in Rs per cattle per lactation)

**Estimation of optimal level of inputs and returns:**

To suggest the resource adjustments, optimal levels of various inputs with existing capital were calculated with the help of following equations.
\[ X_1 \text{ (Optimal level)} = \frac{b_i c}{\sum b_i} \]

Where,

\( c \) = capital (sum of geometrical mean of all inputs)

and the remaining symbols have their usual meanings.

**Concept of Income, Expenditure and Savings Income:**

In income of agricultural labourers, the income received from agricultural and non-agricultural sources have been included. Agricultural income consisted of income received from crop production, milk production and agricultural wages while non-agricultural income included income from service, trade, commerce, other non-agricultural wages etc.

Total income of the agricultural labourers has been treated as farm business income in case of agricultural labourers.

**Expenditure:**

For agricultural labour 'with land', it included expenditure on crop production + milk production + family consumption. While for agricultural labourers 'without land' only family consumption expenditure have been considered. Family consumption expenditure included expenditure on fooding, clothing, housing, fuel and light, health and education, social ceremonies and miscellaneous items.

**Saving:**

Agricultural labour 'with land'
Saving  Farm business income-expenditure (crop production + milk production + family consumption expenses).

Agricultural labourer without land

Saving  Total income from all sources - expenditure (family consumption expenditure)

Technical terms used in the present study:

Agricultural labour:

A worker who earned 50 per cent or more than 50 percent of his income from agricultural wages has been considered as an agricultural labour.

Average propensity to consume A.P.C.

The average propensity to consume is the percentage of income spent on consumption at any given income level. Thus, the average propensity to consume is simply consumption expenditure divided by income:

Average propensity to save A.P.S.

Average propensity to save may be defined as total saving divided by total income.

Household:

A household is a group of persons who commonly live together and who take their meals from a common kitchen unless the exigency of work prevents them from doing so.

Worker:

A worker refers to a person whose main activity is participation in any economic activity by his physical or mental activity.
A person who has engaged himself in any economic activity for major part of the year is considered as workers).

Agriculture labour household:

Such rural labour households which derived more than 50 per cent of their total income during the last 365 days from wages paid manual labour in agricultural occupations.

Non-agricultural labour households:

Such rural labour households which derived more than 50 per cent of their income during the last 365 days from wages paid manual labour in non-agricultural occupations.

Establishment:

An enterprise engaging at least one hired worker on a fairly regular basis.

Enterprise:

An undertaking engaged in production and/or distribution of goods and/or services not for the sole purpose of own consumption.

Wage earner:

A wage earner was taken to be one who reported agricultural labour or non-agricultural labour as his usual occupation.

Labour earnings:

It included income received through wages and self-employment from agricultural and non-agricultural sector. Income from self-employment has been computed by multiplying total days of employment by the average daily wage rates in respective sector.

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