CHAPTER IV
RESEARCH METHODOLOGY

Keeping in view the objectives outlined for the study the cross-sectional data was employed in the following pages a detailed description of the procedure adapted to achieve the objectives of the study is being given:

The data pertaining to land utilization for different crops, use of Tractor, Pumpset on different size of farms, Production and net return from different crops were collected by conducting a village level survey of farms using different level of mechanization on their farms.

Sampling Design

Stratified random sampling technique was adopted for this study to select the ultimate limit of the sample. Allahabad district of Uttar Pradesh State was purposively selected because of the convenience of research work.

Block

Chaka block of Allahabad district was selected for the study. There have been some considerations in favour of selecting Chaka block, the block is one of the developed block of the district. Almost all the crops selected for the study are grown in the block.
MAP No. 2

MAP OF CHAKA BLOCK SHOWING THE LOCATION OF VILLAGES SELECTED FOR STUDY
Villages

From the Chaka block three villages namely, Dandi, Dabhaw and Bagbana were purposively selected (Map 2). Familiarity of the investigator with these villages has been largely responsible for their selection. It is safe to assume that if one is fairly acquainted with farmers from whom he is to collect data of the type used in this study he is likely to get better response. The details of selected village are given in table 4.1.

Table 4.1
Details of selected villages of Chaka Block of Allahabad District

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of Villages</th>
<th>Area in Hect.</th>
<th>No. of Farmers</th>
<th>Total Population</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Dandi</td>
<td>119.6</td>
<td>152</td>
<td>1221</td>
<td>635</td>
<td>586</td>
</tr>
<tr>
<td>2</td>
<td>Dabhaw</td>
<td>168.6</td>
<td>148</td>
<td>1124</td>
<td>572</td>
<td>552</td>
</tr>
<tr>
<td>3</td>
<td>Bagbana</td>
<td>193.2</td>
<td>163</td>
<td>1041</td>
<td>525</td>
<td>516</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Total</td>
<td>1732</td>
<td>1654</td>
</tr>
</tbody>
</table>

Farmers

In the selected villages a complete census of cultivating households was taken from village Dandi,
Dabhaw and Bagbana, 34, 33 and 33 farms were selected at random.

Table 4.2
Details and distribution of selected farmers in selected villages of Chaka Block

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of Village</th>
<th>TDF</th>
<th>POF</th>
<th>TOF</th>
<th>THF</th>
<th>TPOF</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Dandi</td>
<td>103</td>
<td>7</td>
<td>13</td>
<td>16</td>
<td>8</td>
<td>152</td>
</tr>
<tr>
<td>2</td>
<td>Dabhaw</td>
<td>96</td>
<td>7</td>
<td>14</td>
<td>10</td>
<td>10</td>
<td>148</td>
</tr>
<tr>
<td>3</td>
<td>Bagbana</td>
<td>105</td>
<td>6</td>
<td>16</td>
<td>13</td>
<td>10</td>
<td>163</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>464</td>
</tr>
</tbody>
</table>

T=Total, S=Selected

Five different types of farmers:

1. Traditional with bullocks (TDF)
2. Pumpset owner (POF)
3. Tractor owner (TOF)
4. Tractor hire (THF)
5. Tractor & Pumpset owner (TPOF)

Five different type of farmers classified on the basis of adoption of mechanization on their farms - traditional with bullocks (TDF), Pumpset owner (POF),
Tractor owner (TOF), Tractor Hire (THF), Tractor and Pumpset owner (TPOF) (Table 4.2).

Table 4.3
Details and distribution of selected farmers in different size group of farms

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of village</th>
<th>TDF</th>
<th>POF</th>
<th>TOF</th>
<th>THF</th>
<th>TPOF</th>
<th>Total Farm</th>
<th>Selected farm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>T</td>
<td>S</td>
<td>T</td>
<td>S</td>
<td>T</td>
<td>House</td>
<td>House holds</td>
</tr>
<tr>
<td>1.</td>
<td>Marginal</td>
<td>91</td>
<td>6</td>
<td>12</td>
<td>6</td>
<td>10</td>
<td>6</td>
<td>137</td>
</tr>
<tr>
<td>2.</td>
<td>Small</td>
<td>103</td>
<td>6</td>
<td>11</td>
<td>6</td>
<td>11</td>
<td>6</td>
<td>152</td>
</tr>
<tr>
<td>3.</td>
<td>Large</td>
<td>111</td>
<td>8</td>
<td>20</td>
<td>8</td>
<td>14</td>
<td>8</td>
<td>175</td>
</tr>
<tr>
<td></td>
<td></td>
<td>305</td>
<td>20</td>
<td>43</td>
<td>20</td>
<td>35</td>
<td>20</td>
<td>53</td>
</tr>
</tbody>
</table>

T=Total, S=Selected.

Again these farms were grouped in three size groups - marginal, small and large. From marginal, small and large, 30, 30 and 40 farms were selected at random respectively (Table 4.3).

Method of Enquiry:

Data pertaining to socio-economic variables such as operational holding, family size, use of machinery and also about the allocation of area under
different crops by respondents were collected by canvassing a comprehensive and well structured schedule.

Survey method of enquiry was used for collection of data. Selected farms were personally contacted.

Period of Enquiry

The study is related to Agricultural year 1988-1989.

Analytical Procedure

Tabular method of analysis has been used to get the result. Other statistical tools were also used because certain limitation like various groups - marginal, small and large and five sub-groups of the data.

Methods of Analysis

The tabular, statistical and functional method of analysis has been done to get the results for discussion.

Tabular analysis:

This method is quite easy and generally being used to compute the land utilization, cropping pattern, cropping intensity, cost of cultivation and return etc.
with the help of this method few tables have been prepared to interpret the results.

**Cost Concepts**

The cost concepts used for the present study are given below:

**COST A:**

This gives the cash and kind expenses (out of pocket expenses) actually incurred by an owner operator. Therefore, Cost A₁ includes:

1. Hired human labour
2. Bullock labour (Hired and owned)
3. Cost of seeds, manures, fertilizers, insecticides.
4. Irrigation charges.
5. Land revenue and cess.
6. Depreciation.
7. Interest on working capital.

**COST A₂**

Cost A₁ + Rent paid for leased in land.

**COST B**

Cost A₂ + Rental value of own land + interest on owned fixed capital including land.
COST C

Cost B + Imputed value of family labour.

These concepts have been used to arrive at different measures of farm income.

Measures of Farm Income

1. Farm Business Income:
   It is the return to the farm operator for his family labour and investment on owned land and fixed capital. It is computed by deducting cost $A_1$ (or $A_2$ in case of tenant operator) from gross income.

2. Family labour Income:
   It is the return to the farm operator and his family which is arrived at by deducting cost B from gross income.

3. Net Income or Net Profit:
   It is the excess of gross income over cost C and gives an overall picture of farm business.

4. Farm Investment Income:
   It is obtained by adding imputed rent of own land and interest on owned fixed capital to income on
profit (or loss). It is the excess of gross income over cost C, excluding from it the imputed rent of owned land and interest on fixed capital.

Limitation of the study:

In this study the researcher acknowledge certain limitations.

These are:

1. The farmers have to depend on their recall memory to furnish the information as they do not keep any record regarding the costs and returns on their holdings.

2. The farmers hesitate to part with information for the year of being taxed by the government.

3. This study was conducted only in eleven villages of Chalka block in Allahabad district in Uttar Pradesh. Therefore, findings have to be generalised with precaution.

4. In this study to measure the impact of subsidy, only beneficiary farms were compared with non-beneficiary farms. But the incomes of beneficiary farms before and after the implementation of
subsidy was not compared. May be the comparison before and after implementation would have been more useful.

Definition of Concepts and Terms Used:

Large Farmers:

A large farmer is one who is holding land more than 2.00 hectares.

Small Farmers:

A small farmer is one who is holding land from 1.00 hectare to 2.00 hectares.

Marginal Farmers:

A Marginal farmer is one who is holding land upto 1.00 hectare.

Operational holding:

The actual operational holding i.e., land owned, plus land leased in minus land leased out.

Net cropped Area:

It is the actual area under cultivation in an agricultural year.
Gross cropped Area:

The total area under all crops grown in an agricultural year on the operational holding.

Cropping intensity:

Ratio of gross cropped area to net cropped areas expressed in percentage.

The formula is used as follows:

\[
\text{Cropping intensity} = \frac{\text{Gross cropped area}}{\text{Net sown area}} \times 100
\]

Capital Investment:

It is the sum total of fixed capital, working capital and working expenses.

Fixed Capital:

It includes farm buildings, livestock, Dead Stock and layouts.

Working Capital:

It includes value of hired labour, value of seeds, manures and fertilizers, plant protection, irrigation and upkeep charges.
Farm expenses:

These include annual outlays on crop production both in cash and kind i.e. expenses incurred on seeds, manures, fertilizers, chemicals, irrigation, rent paid to leased in land, hired labour and machinery, fuel and lubricants, electricity, machinery repairs, depreciation charges, live-stock expenses, proportionate charges on permanent improvements, interests on fixed capital, working capital and working expenses.

Gross Farm Income:

Value of main and bi-products of all crops at harvest prices.

Non-Agricultural Income:

It is the income from non-farm activity, like from tractor owner - hiring of the tractor.

Repayment capacity:

It is the surplus amount derived at the end of the year after accounting for different costs and fixed commitment. This takes care of family consumption and loan repayments. This can be expressed as:

Repayment Capacity = Net Returns + Non-Agricultural income - (Family expenditure + repayment of past loans).